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science fiction

JUNE
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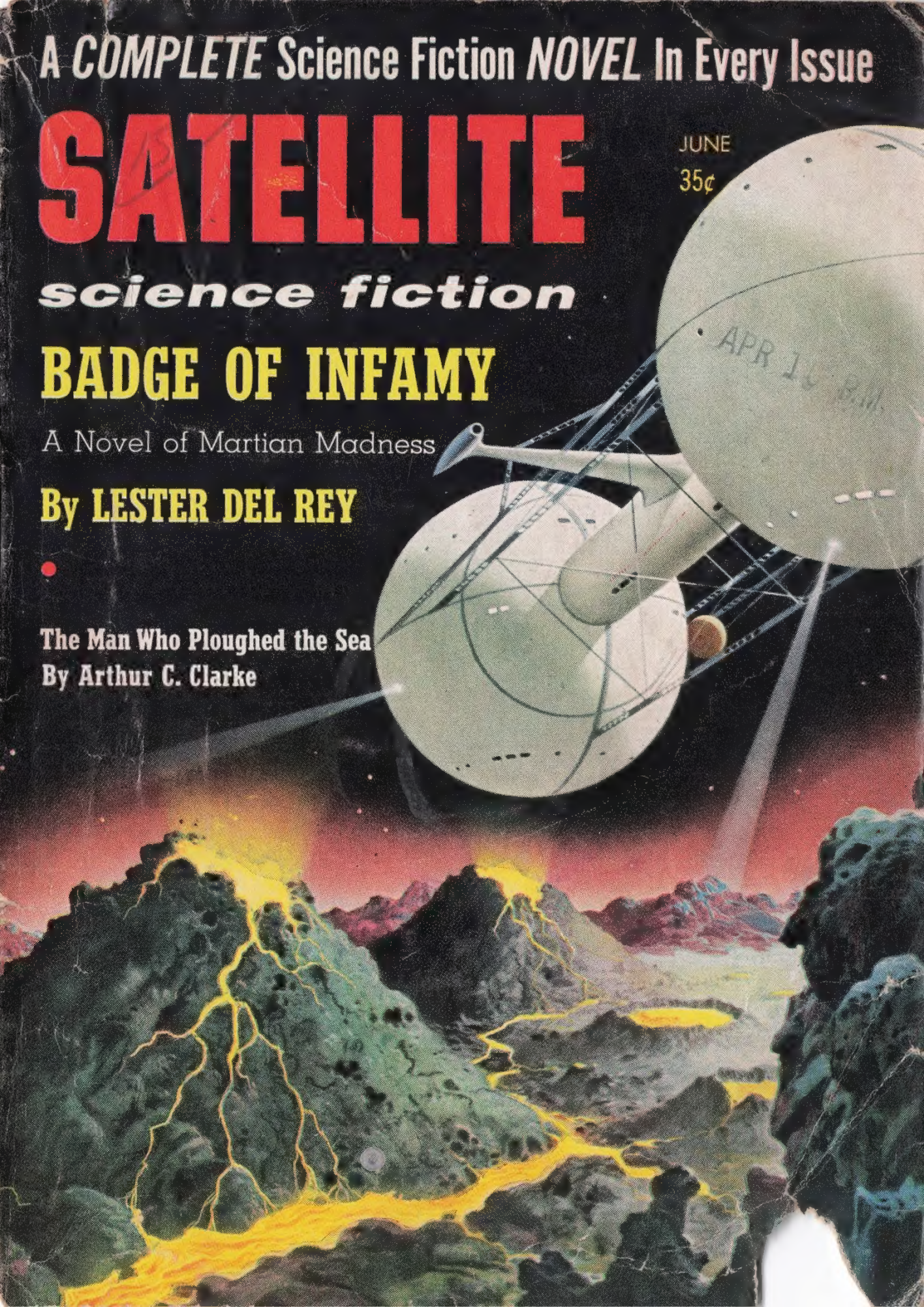
BADGE OF INFAMY

A Novel of Martian Madness

By LESTER DEL REY

The Man Who Ploughed the Sea
By Arthur C. Clarke



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As an entertainment medium science fiction enjoys one wholly unique distinction. It is the great dissolver of barriers. People who read for entertainment often feel that there is an insurmountable wall between imaginative fiction and—all other kinds of reading.

People who read primarily to enrich and enlarge their knowledge of human nature, science, philosophy, world events and the seven arts often make a similar grievous mistake. They assume that such a wall exists and commit the almost unforgivable folly of condemning people who read solely for pleasure. They often brand them as neurotic "escapists," forgetting that in the final analysis a book or magazine which does not give intense pleasure to the reader represents a complete waste of paper, binding and ink.

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And now comes Lester del Rey to confirm this important and abiding truth for us once again—in a new science fiction novel complete in this issue. We believe it to be a novel of very great distinction, a novel about a desperate man at odds with his environment in a world of terrifying conflict—a novel of the future which you will not be likely to forget. Lester del Rey is one of the really big name writers in science fiction, and we think you'll agree that in BADGE OF INFAMY he has scored a brilliant imaginative triumph.

Another triumph has been scored by Arthur C. Clark, famed Book-of-the-Month-Club author in THE MAN WHO PLOUGHED THE SEA, a long story about Harry Purvis which we're sure you'll like.

LEO MARGULIES
Publisher

SATELLITE science fiction

JUNE, 1957 Vol. 1, No. 5.

A COMPLETE NOVEL

BADGE OF INFAMY

by LESTER DEL REY

As a physician Dr. Feldman did not see eye to eye with the Lobbies. He refused to let men die needlessly . . . refused to look upon mercy as a crime. So he became a Martian outcast, with a price on his head.

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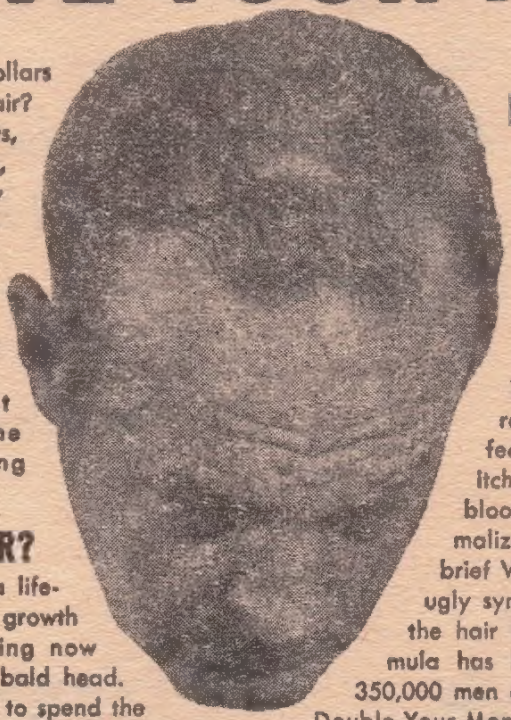

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A COMPLETE NOVEL OF MARTIAN MADNESS

In the chill, terrifying world of the Martian lobbies every human value had been turned topsy turvy. Healing the sick, for instance, could be dangerous . . .

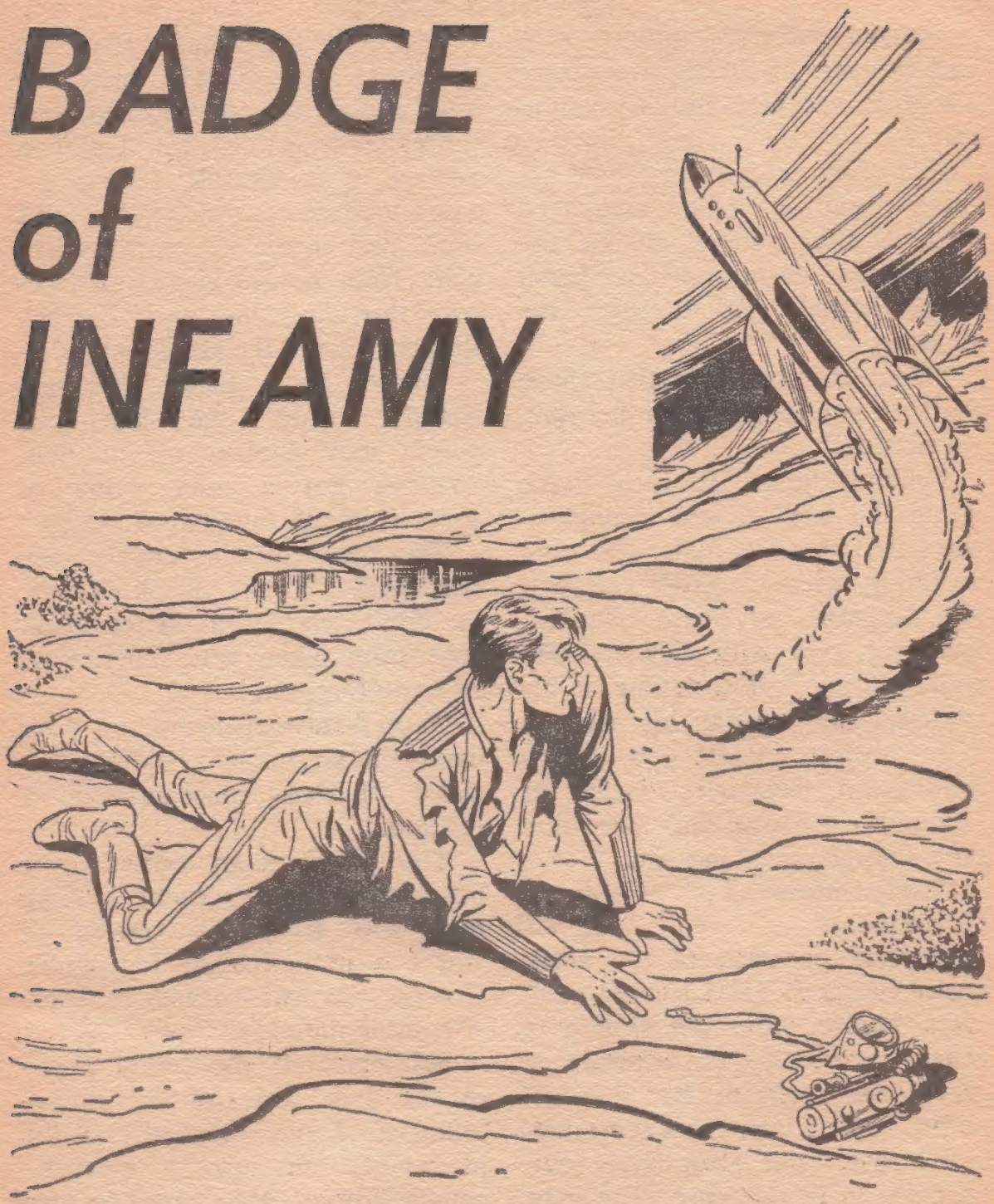
by *LESTER DEL REY*

THE AIR OF the city's most disreputable flop-house was thick with the smells of antiseptics and unwashed bodies. The snowstorm outside had driven in every pariah who could beg or steal the price of admission, and the bare bulb over the attendant's desk cast an almost spectral radiance over long rows of cots filled with fully-clothed figures sleeping under thin, grimy blankets.

Dr. Daniel Feldman tossed uneasily in his sleep, his face saffron-hued in the dim light. It had been a handsome face once. But now a black stubble of beard lay over the gaunt features and accentuated its grim lines of suffering. He looked ten years older than his scant thirty-two, and the bitterness of his lips made him seem almost ancient, as if he had lived five lifetimes in one.

Under the blanket, his clothes were wrinkled and beginning to accumulate the grime which no amount of washing could remove. They had been good clothes two months previously. But now they might as well have been made from sacks. His tall, thin body was curled up tightly to conserve heat against the cold of the flop-house, and his hands clutched instinctively at the tiny bag which

BADGE of INFAMY



contained all of his worldly possessions.

He stirred again, and suddenly sat upright, with a great shock of fear washing through him. But it was no police officer coming to pound his feet and drive him away from the station benches. The moan he had heard must have been his own—a nerve-

tormented protest against cold and hunger, an instinctive crying out that was nine-tenths involuntary.

But then it came again from quite near—a low, anguished wail. A stick rapped against the attendant's desk, and a harsh voice grated out through the shadows.

"You on two-fourteen! Stop that! If you're going to be sick, get outside!"

Feldman heard the moan hack off in the middle, and swung toward the cot on his left. The man reclining there looked well-fed, and he wore no beard. But his face was grey with sickness. He was writhing and clutching at his stomach, and arching his neck as if in protest against the misery inside him. His eyes darted to Feldman's tobacco, and there was pure animal appeal in them.

"Space-stomach?" Feldman diagnosed.

He had no need of the weak answering nod. He'd treated such cases before. The affliction was usually caused by the absence of gravity out in space. But it could be brought on later from too much bad liquor, as it must have been brought on in this case. The man was obviously dying. Violent peristaltic contractions seemed to be tearing the intestines out of him, and the paroxysms were coming faster and faster.

Feldman tightened lis lips and began rolling a *smoke* from his precious tobacco. He held the *smoke* while the other took a long, gasping drag on it. Feldman sucked at it himself, letting the raw tobacco burn against his lungs and sicken his empty stomach. Then he shrugged, and began threading his way through the cots toward the attendant.

"Better get a doctor," he said bitterly, when the hard-eyed young man looked up at him. "You've got a man dying of space-stomach on two-fourteen."

The sneer on the other's face deepened. "Yeah? Look, chum, we don't pay for a doctor every time some wino gets indigestion. Just you forget it."

"You'll have a corpse on your hands in an hour," Feldman insisted. "I know space-stomach, I tell you."

The young man turned over his lottery sheet without looking up. "Go treat it yourself—if you're a crape-hanger for winos. Go on, scram—before I throw you out in the snow!"

Feldman felt the blood rising to his face. One of his white-knuckled hands reached for the attendant, but just in time he caught himself. He started to turn back, hesitated, and finally faced the attendant again, his eyes narrowing in rage. "I'm Daniel Feldman," he stated. The lines in his face deepened, and his lips barely moved.

The young man nodded absently. Then, all at once, the words seemed to register. He looked up in startled disbelief, studied Feldman intently for an instant, and reached for the phone. "Give me Medical Directory," he muttered.

Feldman felt the attendant's eyes boring into his back as he stumbled through the aisles to his cot again. He slumped down and rolled another cigarette. His hands shook, and he spilled tobacco on the floor.

The sick man was half-delirious now. He was shaking all over, and his moans were mixed with weaker, whining sounds of fear. A few of the other pariahs had come over to stare at him. But now they were turning back, putting the tragedy down to another wino gone over the line.

Feldman turned over, trying to imitate their grim, hard fatalism. He'd spent his last fifty cents for a package of tobacco and one final relaxing night's sleep. He needed sleep desperately. There was nothing he could do. Let the doctor who was coming worry over the corpse he'd find. He was only Daniel Feldman, pariah—a gaunt skeleton of a man who had once specialized in spatial and non-terrestrial diseases.

He ended by cursing himself and the man who had chosen this night of all nights to die, and rob him of his sleep. He turned on his side again, and slowly, unforgivably, he began to weaken. It was not too late. Hot water and skillful massage could still save the man. In fifteen minutes, an experienced physician could have the paroxysms halted.

Feldman suddenly found his feet on the floor, and his hands already reaching out. Savagely, he pulled himself back. Sure, he could save the poor devil—and wind up in the gas chambers! There'd be no mercy for his second offense against the laws.

Six months before, it would have been different. He'd been a rising young doctor, engaged to the daughter of the Secretary of the Medical Lobby. Maybe he'd been a bit too impetuous and idealistic for the world of 2100. But a lot of young doctors started that way. With time, he'd have gotten over it.

Unfortunately there hadn't been time—a fool friend had shot himself with a gun that was supposed to be purely ornamental. Feldman had only himself to blame, of course. He'd known the penalty for operating outside of an established Medical Lobby hospital. His original intention had been only to make the man comfortable, so that he could die without pain, while awaiting fatally tardy aid. But compassion had taken possession of him, and he'd gone on to remove the bullet

that was pressing against his friend's heart.

The fact that the patient had recovered had saved Feldman from an automatic charge of manslaughter, but it hadn't prevented the Lobby from stripping him of his right to practice medicine and posting him as a pariah, unable in the future to accept skilled work of any kind.

Such idealism and soft-headedness might have been all right a century ago, before the Lobbies had taken over the government, and when all the fools had been babbling about progress, and the world had been running downhill toward self-extermination. But indecisive Presidents and bickering congresses had betrayed their trust too long. The Lobbies had seized control at the last moment before Doomsday. There had been no time left for idealism, liberties, and the shilly-shallying of pious phrases.

It was a safe world, now. Quite conceivably progress had come to a halt at about the 1980-period level, and quite conceivably the oligarchic lobbies operated on a realistic level of pure profit. But at least the citizens were safe now—provided they didn't break the rules of their individual Lobbies. Finance, Space, Construction, Labor, Food, Medicine and the other Lobbies had succeeded in saving the race from its own hot-headed folly. Some small things could perhaps be justifiably sacrificed for that.

Feldman grunted, wondering if such a sacrifice could ever be justified. The lessons he had learned in school kept coming back to torment him. Why should he have to let a man die when he could save him by simple exercise of his natural skill, training and experience in the profession of his choice? Why? What did such a tragic sacrifice gain the Lobbies—or the people? He stole a glance at the sick man, winced, and turned away again.

It had been his bad luck that the Medical Lobby was one of the most powerful and most repressive groups in existence, controlled by doctors who had studied medicine only to advance themselves politically. They worked on laws which made for sound business—though there were always enough other good reasons which could be drummed up to make them seem high-minded idealists. The brief attempt at group medicine, forced through a hostile Congress by public pressure in the twentieth century, had been deliberately designed to fail, and had strengthened the hold of the reactionary elements in the profession.

Then a plague had begun in a laboratory as the result of an attempt to find a new attack on germ-carried diseases. It had killed millions and virtually crip-

pled the power of the research men who were most interested in medical change and progress. And finally, the very effectiveness of modern antibiotics had made the profession too easy. Incompetents could drift in for the six-year course and find their practice almost a sinecure. They still took the Oath of Hippocrates, but the allegiance now was sworn to the Lobby rules. He had violated the Lobby rules. Now a man had to die because of his folly.

Feldman looked at the dying man again, trying to roll another cigarette. The poor devil was quiet now. For a second Feldman just sat there, staring. Then he tossed the cigarette aside and got to his feet. The man had ruined his last night of sound sleep, had brought it on himself by going on a criminally reckless spree. But he was human, and he was alive —and Feldman knew a cure technique which just might work, if he applied it with sufficient vigor.

It was the trembling of his hands which stopped him. He no longer had the strength or the certainty to make the intricate massage effort which was so urgently needed.

He was sitting on his bunk, staring in self-disgust and self-loathing at his shaking hands, when the legal doctor arrived. The man was old and tired—probably he had been another idealist who had wound up defeated. He seemed content to leave things to accepted Medical Lobby procedure, a fact which became obvious the instant he bent over the dying man.

The doctor turned back quickly to the flop house attendant. "Too late, I'm afraid. I'll give him a shot of necrotin to make it easier. But I can't do anything else. There. Umm, that should do it. Anyone here know him? I'll need his name for the death certificate."

His eyes swung almost pleadingly about the bunks, to come to rest on Feldman. He started to turn back to the corpse, then halted abruptly. A startled look came into his face.

"Dr. Feldman! Good Lord! Yes, I *thought* I recognized you. I'm terribly sorry. You shouldn't be—in a place like this. Do—do you know this man, Doctor?"

Feldman shook his head bitterly. "No. I don't even know why the convulsions stopped—*if* it was space-stomach! Do you, Doctor?"

The older man shook his head, throwing a startled glance back at the corpse. Then he shrugged grimly, and nodded at the attendant. "Well, we'd better go through his things. If this place is lucky, he might have enough identification for the certificate."

The attendant was already pawing through the bag under the

cot. He threw some knickknacks into a waste-bin, and drew out a wallet containing a few bills and a large, bronze ticket. "Arthur Billings, Doc," he read out. "Space crewman. Here, you want this?"

The doctor took the certificate, and deftly removed the wallet from the youth's other hand. "I'll take this, too," he said. "If he has money, my fee comes out—Medical Lobby Authorization!" He riffled swiftly through the bills, taking all but one. "And this goes to the man who first reported the sickness, of course. At least it saves the State a bill. Now let's see your records for the night."

The young attendant's hand had gone toward the wallet. But the doctor stared toward Feldman, his face a mixture of speculation and pity. He placed the wallet at Feldman's feet.

"The Medical Lobby rules apply, Feldman" he said, "even to a man who breaks them. There's your report fee."

Feldman reached down despairingly for the wallet. He moved so slowly that the doctor was dragging the attendant off when he straightened again. He stared at the bill, and at the corpse, shaken for the second time by self-loathing. His fee for letting a man die!

It meant food for a day or so, however—shelter for a few more nights. He no longer had a right to any kind of pride. Grimly he removed the bill from the wallet and pocketed it, along with his cigarettes.

He dropped the wallet on the cot beside the space-ticket, and stood for an instant staring down at the face of the dead man. The white, unmoving countenance was speckled with tiny dots. The peculiar markings caught his eyes, and he drew abruptly closer. Black dots? What had they to do with space-stomach—and *why* had the man's convulsions lessened toward the end?

He swore and stood upright. Then the space-ticket caught his eye. For a moment he was torn by indecision. He'd be a fool to think about the *out* it promised him. He'd heard enough about life on the space-ships. But . . .

He shoved the ticket into his pocket with sudden, angry decisiveness and stumbled out of the flop-house, no longer able to stand the accusing eyes of the corpse. Nothing could be worse than Earth for a man who had once been a rising young physician with the future bright before him. From that hell at least the space-ticket could rescue him.

Outside, snow was falling, soggily, in slanting sheets. Feldman hunched his coat collar up, shivering a little as the slush penetrated the holes in his shoes. He passed a cheap restaurant, and the smell of food set his

stomach to churning. He had not eaten for thirty hours and now the mere thought of food nauseated him.

He fingered the bill in his pocket. His half-formed resolve to use the space-ticket was rapidly evaporating in the cold sanity of the open streets. But somehow he could not quite bring himself to tear the ticket up. He moved past the restaurant, heading uptown. After a while, the slush in his shoes and the snow pelting against his face bothered him less. He rolled another cigarette and moved numbly on, inhaling the smoke, hardly thinking. It was better that way.

It was the big numerals set into the sidewalk which finally caught his attention. 1680—the number of the Medical Administration Building, where he'd spent three arduous but rewarding years as a physician and three wretched weeks in custody. He let his eyes wander to the massive stone entrance where he'd first bumped into Christina Ryan years ago—on the third day of his pre-med examinations. Nothing about the building had changed since he'd proposed to her directly in front of it when they'd finished the six-year course together.

Six months ago he'd stumbled out of the big, sprawling edifice with all of his hopes blasted by the trial over which her father had presided. She'd been packed off to Europe in haste, and he had neither seen nor heard from her since—which was just as well perhaps.

He stood there, staring at the smug young medical politicians and the tired old general practitioners who were filing in and out. One of the latter halted, without looking up, and thrust a coin into his hands.

"Merry Christmas!" the old doctor said.

Feldman fingered the coin, realizing that Christmas had come without his realizing it. He spotted a grey Medical policeman eyeing him, and decided that it was time to move on. Sooner or later, someone would recognize him—and he'd had enough recognition for one night.

He was looking, with growing concern now, for a coffee-shop that sold synthetic foods. Synthetics were cheaper than natural meats and vegetables and he'd had his metabolism checked to make sure his health would not suffer when he first became a pariah, and had to resort to synthetic food occasionally.

A flurry of motion registered in the corner of his eye.

He heard someone call out: "Taxi!", and saw one of the doctors turn to stare at a slender girl who was rushing down the steps of the Administration Building.

Christina Ryan's blonde loveliness was enough to stop any man,

even one who hadn't known her. The grey Medical uniform which she wore seemed moulded to her through the clear plastic of her storm coat, and her spun gold hair glistened in the lights of the street. Her snub nose and determined mouth may not have conformed exactly to the current fashion in beauty, but nobody who saw her for the first time ever stopped to think of fashions. Standing there with a heavy bag in one hand and the other arm raised to flag a cab, she presented a smooth flow of impatient curves that would linger for years in a man's mind, and stubbornly refuse to be dispelled.

Feldman swung toward the cabs without thinking, while the blood pounded in his throat. For a moment, his attitude was automatic and assured. A cab stopped, despite his clothes, and he swung the door open and motioned for her.

She darted across the curb, a brief smile curving her lips, one hand fishing into her pocket. "Thank you, my good man," she said, holding out a few coins.

Then recognition hit her, just as she dropped onto the seat. Surprise gave way to consternation, and her head snapped around abruptly. The coins fell into the snow, and her voice was harsh as she leaned forward toward the driver.

"Get going, driver!" She said.

Horns were sounding around him as he stared at the coins that were melting in the slush. He lifted his foot to kick at them, then shrugged in bitter resignation and despair.

Another cab was swinging out to go around them. He jerked the door open, and threw himself toward it savagely, waving his single bill at the protesting driver.

"Space port," he ordered.

He was a fool, and he knew it. He was burning his bridges with a vengeance. But he'd be an even bigger fool to stay on a world that had completely cast him out. It would always be too small a world for a pariah who had once been an idealist, and couldn't quite get over it.

II

MOST LOBBIES represented two classes of citizens—those who were important, and those who were not but who lived comfortably enough, provided they settled into the routine of their Lobby. Space Lobby had both of those classes, but the crews of the spaceships actually constituted a third class, closer to pariahs than to citizens.

Only the physically strong and mentally doubtful were given space-tickets. It was a rough, ugly life, and a short one. Passengers and officers on the big tubs were given the equivalent of gravity in

spinning compartments, but the crews rode "free." The lucky ones got space-stomach now and then and recovered. The cards of the others in Space Lobby Administration Building were destroyed. Nobody cared about dead spacemen.

Feldman had treated several such men, and was reasonably sure there would be no close check on his stolen ticket. He had already noticed that it was work-stamped for the *Navaho,* and he had no trouble finding the shuttle-rocket to the orbital station where the big ship was docked. A jerk of the pilot's thumb directed him back to a cramped compartment, where he spent fifteen minutes of agony under the hammer of acceleration with two other miserable space-bums. Then the blasts stopped, and he got his first taste of being "free."

They slipped into a landing tube at the station an hour later. Feldman waited until the two others pulled themselves expertly along the handrails, let his sick stomach right itself again, and then headed clumsily after them. He was faintly curious about the big orbital station—one of six that rotated about Earth just above the atmosphere. The interplanetary ships never touched surface, always docking and discharging at the stations for shuttle service to the planets.

It was disappointing, for he saw only a long metal hallway with men busy floating freight about.

Someone sighted the three men and shouted. A checker came out, sorting through flimsies. He took the tickets without comment, barely glanced at them, and punched a mark out after the work-stamp.

"Deckmen forward, tube-men to the rear," he grumbled at them. "You're late. *Navaho* blasts in fifteen minutes. That'll be two days' pay docked. Scram!"

He flipped a lever, and a soft-rubber seal distended, opening into a narrow passageway. Feldman guessed that it must be one of the walkways in the *Navaho,* though it was hardly like the stereos he had seen.

He began pulling himself forward after one of the space crew, dodging the freight that was floating in. The loaders seemed to form a living chain, digging their feet into hooks and tossing the baggage from hand to hand. He heard a shout behind him and tried to duck.

A big trunk hit him squarely in the back, driving him away from the handrail. The crewman ahead of him looked over his shoulder, and made a series of contortions that brought him back within reach of Feldman, one hand stretched out.

"Damn station-lubbers," he muttered, as Feldman was pulled

violently back. "Hey, bo—you got a bronze ticket." He shook his head pityingly. "Tubes. Back that way—all the way back. And watch out for them loaders."

Feldman nodded bitter thanks and headed aft. At least his luck had run true to form. Tubemen had the lowest lot of all the crew. Between the killing work, space-stomach, the heat of the tubes, and occasional doses of radiation, their lives weren't worth the paper their tickets were printed on.

He swore to himself. Then he swore again as his forehead hit against another piece of floating luggage. He pulled himself back, rubbing the bruised spot, while he stared at the bag.

Dr. Christina Ryan, the ticket on it proclaimed. *Southport, Mars. Courtesy ticket.*

Suddenly it didn't matter that he had to work the tubes. There was no other place on the ship where he'd be less likely to run into her. Space Lobby and Medical Lobby were close allies, due to their shared interests in Martian colonization, and she'd have the complete run of the ship, as a doctor. But there was little chance that she'd examine the dangerous and unpleasant tube section.

He dragged his way back, beginning to sweat as he realized that the time was running short. The *Navaho* was an old ship, huge and flimsy, and she'd needed an overhaul for at least ten years. A lot of the hand-holds were missing, and he had to throw himself along by erratic leaps. He was gaining proficiency—but not enough to handle himself properly if the ship blasted off.

Then he found a sign marked *Tube Quarters* and pulled into it. Six men were already there. They looked up at him, nodded, and motioned to a hammock. They were busy with small bits of apparatus.

"Jim Benson," one husky introduced himself. "Tube chief. Know how to operate a still, bo?"

Feldman could see now that the bits they were putting together were parts of a small still. He'd heard that spacemen got all the beer they wanted, and that they drank phenomenal quantities. He began to understand what really happened to it now.

"I can figure it out, I guess," he admitted. "I'm—uh—Dan."

"Okay, boys," Benson announced. "No initiation for this fish. He works the still. Hit the sacks!"

A high whistle had begun through the ship. Feldman pulled himself up to the hammock assigned to him—or more accurately, the net sack suspended between two supports. He watched the others and zipped it closed around him.

The *Navaho* began to shake faintly, and weight piled up. But it was mild compared to the shut-

tle. The big ships couldn't take high acceleration. Space had been conquered for a hundred years and Mars had been settled for eighty, but the ships were still flimsy tubs that took months to move from planet to planet, using immense amounts of fuel. Only the valuable plant hormones from Mars made commerce possible at a freight rate of two dollars an ounce.

Dan Feldman's body settled further into the sack, and the missing hours of sleep caught up with him.

Three hours later he found out why so many spacemen quit and turned pariah. The tube-quarters had grown insufferably hot during the long blast, but it was cool compared to the main tube-room where Benson led the men after blasting eased. The chief handed out space-suits silently, and motioned for Dan.

"Greenhorn, aincha?" he said. "Okay, Dan, you get the easy work this time. We go out in the tubes and pull the lining. I pry up the stuff. You carry it back to the tube room and stack it."

They sealed off the tube room, pumped out the air, and went into the blistering, mildly radioactive tubes, just big enough for a man on hands and knees. Beyond the tube mouth was empty space, waiting for the man who slipped. There would be no attempted rescue, either.

Benson began at the tube entrance, ripping out the eroded blocks with a special tool. Feldman pried them up with his metal gloves, carried them back, and stacked them along with the others, while one man ran a furnace that melted the stuff down into new blocks. The work grew progressively worse each day, as the distance to the tube room increased—and the tube mouth yawned closer to them. There were no handholds here—only the friction of a man's body in the tube.

But his muscles began hardening to the work. Life settled into a dull routine of labor, sleep, and dull self-recrimination. The idle talk meant nothing to him. Only when the little still brought forth a fresh supply of crude white mule was there any sign of relief for him—and the next day's hangover more than made up for that.

They were six weeks out and almost finished with the tube cleaning when Number Two tube "blew." Some of the bits of remaining radioactive fuel must have collected slowly, until they reached blow-point. Even Feldman in Number One would have gone sailing out into space, had Benson not seemed to react without time lag. The ship leaped slightly, and Feldman brought up sharply against the chief's braced body. For a second their fate hung in the balance. Then it was over,

and Benson was shoving him back, his face ashen.

He jerked his thumb and touched helmets briefly. "There they go, Dan."

The two men who had been working in Number Two were charred lumps, drifting back from the ship.

No further comment was made on it, except that they'd have to work harder from now on, since they were short-handed.

Feldman got no sleep that night. He was trying to picture the minds at Space Lobby that could justify such treatment of human beings. The teaching he had received at school came back to him, giving ready answers glibly enough. But they weren't convincing. His treatment at the hands of the Medical Lobby didn't seem quite natural, either. Where did a man's duty lie—with the rules of the Lobby, or with his own sense of right and wrong?

He woke up with a mild attack of space-stomach—which meant no more drinking for him—and was off work for a day. Then the pace picked up. The tubes were cleared, and they began laying the new lining for the landing blasts, working on a stepped-up schedule of fourteen hours a day. He had no time for thought, after that.

Mars' orbital station lay close when the work was finished, and the *Navaho's* bo'sun had been riding their tails for the last week to get the work completed on time.

Benson slapped Feldman on the back, and ordered him into the sack. "Y'ain't bad for a greenie, Dan, I'll give you that. We all get six-day passes on Mars. Sleep now, so you won't waste it. We'll hear it when the ship berths at Mars' station."

Feldman didn't hear it, but the others did. He felt Benson shaking his shoulder, trying to drag him out of the sack. "Grab your junk, Dan. Mars, here we come!"

He shook his head, then changed his mind. There was nothing to hold him on the ship—and he had no desire to risk the long return trip. With his pay, he might be able to slip away and find some kind of life on Mars. Life in the main was colonial there, and notoriously lax about some Lobby rules.

Benson was handing out the men's few possessions. He picked up Feldman's bag and threw it toward him, grinning at its lightness. Feldman grabbed for it, and missed. The contents drifted on, while he lunged after them, with Benson's laughter ringing in his ears.

The laughter ceased abruptly. The chief leaped for a spinning space-ticket, yanking it down. He passed it quickly to the others. There were murmurs of utter astonishment, of shocked disbelief. Then with a single group

movement they faced Feldman, and began advancing.

"Art Billings' card!" The chief spat it out with incredulous rage. "Five trips Art made with us—and saved every cent he could get, so he could buy a farm on Mars and live like a human being. Five trips—and he didn't come back. What did you do to him? You got nerve, coming here on *his* card. Nerve—but not much sense. Did you murder him?"

They moved toward him as though they were sure that he had. Feldman jerked his eyes from man to man, looking for one of them who would listen to reason. But there could be no quibbling here. Apparently trial had been held, and a quick, cruel, collective judgement had been passed against him—a judgement he could not hope to reverse.

"Arthur Billings died of—"

He was not allowed to continue. Benson's fist snaked past his raised hand, and connected solidly with his jaw. He bounced off the wall, and went staggering backwards down the long passage toward the main part of the ship. From behind, a massive wrench sailed toward him. It glanced off his arm, ripping agonizingly at the muscles, and hurling him to his knees. Then the four were after him, yelling like enraged bull elephants.

Feldman knew better than to try to fight them. He'd seen the results of spacemen's fighting too often in the past. He got swayingly to his feet, fumbling for the handrails. His arm was on fire, but he had no time to waste in futile self-concern. The rail churned past his straining hands, his feet flailed at the wall. But he was unable to outdistance them.

They were swiftly gaining on him, aided by superior experience in shipboard pursuit. His eyes darted to the side, where a very narrow passage cut across the one he was in. For once luck favored him. He plunged through the little opening, turning sharply sideways, and almost at the same instant the others overshot, and had to turn.

Feldman caught his breath, his temples pounding. He had no time to rest. He leapt quickly into another passage, and tried to pick up speed.

Again he changed passageways. But this time his luck ran out. He barged head-on into a group of three people moving down the fourth corridor. His forward plunge bowled them over like tenpins, but the crash brought him to a staggering halt, right where the bo'sun's hands could pull him down.

Beside the bo'sun, the Captain was assisting Chris Ryan to her feet. And just beyond, the four tubemen were waiting.

The Captain waited for no explanation. "Back to your quar-

ters!" he ordered. "You—what's your name?"

Chris' eyes were squarely on Feldman, cold and unsympathetic. "He's Ex-Doctor Daniel Feldman, Captain Marker," she stated. "He's a pariah—he must have sneaked on board, or stolen a ticket."

Feldman stood paralyzed, hardly able to believe his ears. The thought that Chris would actually denounce him had never entered his head. She knew that a pariah was forbidden on board a spaceship—under penalty of death. And she knew that the sentence of manslaughter against him had been only suspended—not cancelled.

Marker rubbed the dust of the passageway from his uniform and considered it slowly.

"Thank you, Doctor Ryan," he said. "I should take this criminal back to Earth in chains, I suppose. But unfortunately I can't assume responsibility for that much extra weight. He isn't worth fifty dollars an ounce. The owners would be furious. You men—want to take him down to Mars and ground him there?"

Benson grinned savagely, and touched his forelock. "Thank you, Captain. We'd enjoy that. *We sure would.*"

"Good. Tie him up, collect your wages, and get going. I'll drop the deduction for your good conduct this time."

He swung to Feldman. "And you—what name did you ship under?"

"Arthur Billings," Benson answered.

"Very well. Your pay will be carried on the books until Arthur Billings collects it, or until it reverts to the ship fund by custom. That's all, men."

Five hours later the shuttle took off from the Martian orbital station for Southport, Mars. The four men sat around Feldman, waiting silently. Twice he started to explain about Billings again, and each time the words went unspoken.

Benson must have sensed what was on his mind, for he growled suddenly, "What's your story, bo? You got your lies all ready. You might as well tell 'em."

"What's the use?"

"Give, I said!" Benson twisted Feldman's arm back toward his shoulder. He applied increasing pressure, his expression merciless. "What happened to his money, at least?" he demanded. "You'd better tell us—unless you want me to break your arm."

"A doctor took it for his fee when your friend died of space-stomach. Damn it—"

Benson looked at the others. "Med Lobby fee, eh? All the market will take. It probably ain't true—but it could be. Okay, bo—we won't kill you. Not quite, we won't."

The shuttle landed, and Benson handed out the little helmets and aspirators that made life possible in the thin air of Mars. They led him out, giving him no chance to break away.

Outside, they took turns holding him and beating him, while the passengers disembarked. Nobody bothered with a spaceman's quarrel. Chris Ryan and the others moved toward the port station. Again he had a picture of her frozen face as he slumped into unconsciousness.

III

FELDMAN GROANED and tossed. trying to break through the fog of pain. But it only grew worse. Confusedly through his torment he remembered that somewhere in his bag he still had anodyne tablets that would kill any pain. He tried to sit up, while his spine seemed to break apart, atom by flaming atom. He made it on the third try.

Dim light shone on him from the buildings some distance away, but the temperature told him that night had fallen on Mars at least two hours before. He found the pill and swallowed it, fumbling with the aspirator until he found the lip opening.

The firm texture of the aspirator between his hands reminded him that his life was dependent on it. He twisted his body tenderly to stare at the tiny glowing charge-indicator on the battery, and found it down to half strength. Then he saw that someone had attached another battery to the original one. He puzzled over it, but he had no objections. It meant he had at least a few days more to live—if he could find shelter.

Some of the pain was leaving him now, under the powerful drug's influence. He stared about him, realizing that he had not moved from the vicinity of the attack. The light must be coming from the station. The pill hadn't made the numbing chill from the freezing air less difficult to bear. He shivered, getting unsteadily to his feet, and started walking toward the station. There was still a quarter and a dime in his little bag—his change from his last taxi-ride on Earth. It represented his entire fortune.

The tube-men hadn't killed him—but he found himself almost wishing that they had. Not only were batteries an absolute necessity, but food and shelter would be expensive here, and he had neither money nor the ability to earn it. Chris had seen to that when she had branded him as a pariah. When the batteries were exhausted, he would die quickly from asphyxiation. But meantime, he must try to find warmth and temporary shelter—or death would come even more swiftly.

The tiny restaurant in the station was still open. Feldman went

stumbling through the double doors, where the warm air seemed to caress his entire body. The instant he was inside he pulled off the aspirator, cutting off the battery.

The counterman didn't even glance up as he entered. Feldman gazed at the printed menu—and flinched. Synthetic coffee was the cheapest item—black, 25¢; with sugar, 30¢.

"Mud," he ordered. "Double sugar." He had the good sense to realize there'd be a little energy in that, and the nickel difference was of no great importance.

"You look as if you needed it, friend," the counterman said.

Feldman nodded, and began sipping at the bitter liquid. Earth operated on a mixed diet. The old natural foods were eaten by those who could afford them, and the synthetics by the impoverished. But Mars food was all synthetic. In fact, Martian plants had led to the secret of food synthetics—or rather, to the ability to make use of artificial foodstuffs on a large scale.

Many of the natural food substances on Earth consisted of chemicals which could exist in either of two forms—isomers, as they were called. Isomers were chemically alike but different crystallized. The levo-form rotated a special beam to the right. Sometimes either form was digestible. But frequently the human body could only make use of the isomer to which it had become accustomed. On Mars, the plants had produced different isomers from those of the Earth foods.

And the experiments in synthetic foods had produced the same isomers as the Martian plants, indicating that Mars was actually a more rewarding natural laboratory for food experimentation than Earth. It had been the need for the early colonists to live off Martian food which had led to the discovery of an enzyme that enabled the body to handle both. In a few weeks of eating Martian or synthetic food, the body could become adapted to that type. Then, in a short time and without more of the enzyme, it would lose its power to handle the normal Earth foods.

The cheapness of the synthetic foods and the discovery that many of the diseases common to Earth would not attack Mars-normal bodies had led to the extensive use of the synthetics on Earth by all who couldn't afford the more flavorful natural foods.

In one of his pockets, Feldman found a cigarette that was sadly mangled but still smokable, and lighted it. For a moment he remained silent, feeling utterly wretched, his hand shaking so violently that he spilled some of the coffee and had to keep setting the cup down.

"Any objections if I sit in the

waiting room?" he asked, in a voice that hardly rose above a whisper.

He'd expected a flat rejection, and had braced himself for it. But the counterman merely shrugged. Feldman finished the last dregs of the coffee, and went through the door.

It was almost dark in the waiting room, and the air was chilly. He found a bench, and slumped down on it, trying to remember to favor the injured spots of his body. Under the pain-deadening anodyne, a man could injure himself without any pain signal at all being flashed to his brain.

Then he remembered that it hardly mattered, in his case. He tossed the stub of his cigarette away.

He was still slumped over when a commotion from the restaurant reached his ears. Apparently the counterman could talk when he chose. Feldman half-lifted his head, then let it sink back on his chest.

Feet sounded on the boards of the waiting-room floor, and came to a stop directly in front of him. A thin beam of light darted toward him through the gloom.

He stirred, almost certain that he would be asked to move on. The shoes, made of some off fiber, didn't look like those of a cop—but how could he be sure on Mars. He lifted his head. The light blinded his eyes and he saw the man as a hulking, menacing figure in the semi-darkness.

The voice was dry, nasal, and old. "Are you the man who was once a medical doctor?"

"Yes," Doc Feldman answered, making no attempt to rise. *"Once."*

There was satisfaction in the shadowy form's reply. "Good. I thought it was just a rumor at first. Come along, Doc."

Why? he wondered. *What do they want of me?* It didn't matter, except that he was tired of being kicked around. If they expected him to move on, they'd have to push a little harder.

The light turned upwards, to reveal the speaker clearly. He was browned to the shade of old leather. His head was crowned by a bleached patch of sandy hair, and he had the deepest grey eyes Feldman had ever seen. It was a face that could have belonged to a country storekeeper in New England, with even the same hint of dry humor in the slope of the tight-lipped mouth. The voice had a "Down-East" twang to it, too.

The man was dressed in padded levis and a leather jacket of unguessable age, but his tall, raw-boned figure had molded the clothes to his own personality. He was bent over now, his big hands in awkward motion. Suddenly one of them flashed sharply, and a huge-bladed knife sprang into

view. There was nothing awkward about the movement.

"You might say we're friends, Doc," the voice drawled at him, with a shading of grim humor. "Or maybe me and my knife are friends. You can take your choice —just so long as you come with me peaceably."

Feldman shrugged. If the man was a Lobby policeman sent to eliminate him, he was startlingly different from the usual kind. If he wasn't, there was nothing to be gained by trying to fathom his motives or putting up a futile fight.

"You win," Feldman said.

They went out through the two doors of the waiting room, toward a rattle-trap vehicle which was parked just outside. It looked something like a cross between a schoolboy's automobile and a scaled-down Army tank of former times. The treads were caterpillar style, and the stubby body was completely enclosed. A tiny airlock stuck out from the rear.

Two men were inside, one at the driver's seat, and the other at the lock. They were both bearded, granite-faced, and scowling. They carried knives that matched in sturdiness the one his captor had displayed.

The first man shoved Feldman into the vehicle's narrow lock, and one of the others received him. Then the older man crawled slowly through.

"He came peaceable, boys," the old man said. "Mighty cooperative for an Earthling, if you want my honest opinion. Mark, Lou, meet Doc Feldman. They're friends, Doc. And I'm Jake Mullens. You might say we're farmers. Sit."

Lou and Jake posted themselves at each side of Feldman, and Mark started the wheezing motor. They swung about sharply and began heading away from Southport toward the desert dunes. The tractor shook and rattled, but despite its unsteadiness it seemed to make good time.

"Quite a to-do about you, Doc," the older man said. "Seems they're trying to find some law that says pariahs can't stay on Mars. But the Lobby that runs things here never got around to passing it. You can't trust those bigshots at Space Lobby as far as you can throw a stone. Bad precedent you're setting. I reckon they'll be pleased to find you gone—though they sure didn't make it easy for us to find you. Bracky?"

Feldman took what seemed to be a cigarette, and then studied it doubtfully. It was coarse and fibrous inside, with a thin, hard shell that seemed to be a natural growth, as if it had been chopped from some strange vine. He lighted it, not knowing whether to expect a soothing narcotic reaction or nothing at all.

He coughed as the bitter, rancid smoke burned at his throat

and tongue. He started to throw it down, and hesitated. Jake was smoking one, and it had at least killed the craving for smoke that had begun when he threw away his last butt.

"Some get used to 'em, but most don't," Jake said. "Depends on how crazy you are for a smoke. Look—see those tumbled stones over there? They are old Martian ruins—built by some race a million years ago. There are only half a dozen ruins like that on Mars."

It was only a clump of weathered stone monoliths glimmering in the light from the tractor, and Feldman had seen far better ruins in the stereo shots. Viewed from a space-ship, they would have appeared to be surrounded by a thin network of canals. But on the surface, there was no sign of a canal, and nobody had ever been able to discover what created the canal illusion. It was due to something the mysterious Martian race had done, but the secret remained buried with them.

He waited for Jake to go on, but the old man remained silent. Finally Feldman finished the raw weed and ground it out. "Okay, Jake, go ahead. When do I get it? You've explained just how much of a bother I am. You've had your amusement. Now what?"

Mullens laughed, dryly at first, and then with unrestrained mirth. At his side, Lou grinned.

"Doc, you're wrong," the old man said. "We're your friends—maybe the only friends you'll have here. Ever hear about herb doctors? I'm one of them."

Feldman recalled then that the Lobby had permitted some leniency on Mars, due to the scarcity of real medical help. There was only one hospital for the planet's hundred thousand colonists, and it was located at Northport, a full day's journey by velocar.

"I majored in non-terrestrial disease," Feldman said.

Mullens nodded. "We knew that, Doc. You see, I'm pretty good with herbs—but I got a desperately sick village on my hands. And I can't handle it alone. Maybe you'll understand better when I tell you that we can't afford deductions against our earnings to pay for a trip to Northport—which is where the bad cases would ordinarily be sent. And anyhow, the head doctor in Southport died six months ago. He was a nice guy, almost Martian in his point of view. I hear he died because he started a little hospital on his own. But you'd know more about the details than I would. And that new she-doctor's getting her metabolism fitted for Mars, so she can't come just yet. Looks like you're elected."

"You're not Lobby agents?" Feldman asked doubtfully.

Jake Mullens laughed, and again the others grinned as though

at some secret joke. "We hate the Lobby, Doc. Well, are you with us?"

Feldman shook his head. "No dice, Jake. You'd better take me back. I'm a pariah. I treated one man I shouldn't have handled, and you can see what it cost me. If I've got to die, I'd rather go out here in the desert than in front of Lobby investigators."

"We heard about your argument with the Lobby. Still, these folks are mighty sick, Doc. Mighty sick. You can help them, and I can't. I'm urging you to change your mind.

Feldman shook his head. "The charge would be first-degree murder if I touched anyone who died. I'm no longer an authorized doctor."

Lou leaned forward to look at Mullens. "Shall I work on him, Jake? I don't want to at all. But if he makes it necessary—"

The old man shook his head. "Time enough for that. Let him think about it for awhile. But you just might blindfold him, in case he escapes and tries to carry word back about the identity of the village. Not that I think he will—but just in case."

Once the blindfold was in place, Feldman sensed instinctively that the tractor had altered its course. Sand howled against the windshield, and the vehicle bumped and surged along, its motor whinning shrilly.

Feldman took another of the weeds, and tried to estimate the speed of their progress. But he had no idea as to how far they had gone when the tractor finally stopped and the three began leading him through what must have been a series of underground tunnels.

When the bandage was finally removed he found himself in a large room filled with narrow metal cots, and the restless moans of desperately ill people. Two white-faced, middle-aged nurses were disconsolately trying to attend to the stricken—four children and two adults. Their faces brightened as they saw Jake Mullens, then set into somber, tight-lipped masks.

"Eb and Tilda died," one of them reported, leading the old herb doctor over to a table on which reposed two sheeted figures, stretched out side by side.

Feldman leaned over Jake's shoulder as the sheets were drawn back, his eyes widening in incredulous dismay. The same black specks he had seen on the face of Billings covered the skins of the two who had died.

"Funny," Mullens said slowly. "They didn't quite act like the others, and they—they sure died mighty fast. I thought sure it was those symptoms in the book—infantile paralysis. How about it, Doc? Sort of like a cold, beginning with a sore throat—"

It was polio, clearly enough, in the other cases—one of the diseases that could remain virulent on Mars.

Feldman nodded grimly, staring at the children who lay sick around him. Finally he shrugged. "There's a cure for it—but I don't have any supplies. I guess you don't or you wouldn't have sent for me. I couldn't help if I wanted to."

"There was an old book," Mullens told him. "It didn't list any cures. But it said the kids didn't *have* to be crippled. There was something about a—Kenny cure. Doc, does the stuff really cripple the kids for life?"

Feldman saw one of the boys flinch, and quickly lowered his eyes, trying in his inner torment to dismiss from his mind the ruthless efficiency of the Lobby's police force on Earth and how that efficiency would almost certainly be able to reach him even in a remote village on Mars.

"Damn you, Jake!" he muttered.

Jake Mullens chuckled, and helped him remove his jacket. "Just tell us what you'll need, Doc. And Doc—well, the villages need a doctor mighty bad. We sure appreciate what you're doing."

Feldman turned away, his lips tightening. "I'm helping with these people—and then I'm pulling out," he warned.

In a moment he was writing down his few requirements, trying to remember the details of the treatment. Exercise, hot compresses, massage—it was beginning to come back to him slowly.

He couldn't turn his back on the children. Anyhow, he wouldn't be really practicing medicine. He'd just be using hot compresses, massage—it was less medicine than the use of herbs which Mullens had mentioned. And maybe he wouldn't have to pull out. Maybe he could hide here until the hunt died down—if there was a hunt for him—and slip into the role of a simple villager.

"No, Doc," Jake's voice wasn't amused any longer. "Nope, you're doing us a favor, and I'll be damned if I'll lie to you. You won't pull out. You can't. There's no other place you can go—and we need a doctor so bad we can't let you be anything else. Once you start in, there'll be sick people in need of you from here to the Equator. And the Medical Lobby will have to accept you—if they find out.

"Anyhow, you *were* a doctor. Maybe they don't mind a few fools like me being herb doctors. But they'd sure hate to have a man who can do medicine get *outside* their hands. Once you're in, you're in for good. Otherwise, get in the tractor and Lou'll drive you back. We don't really torture people here, doggone it."

Feldman looked at Mullens, seeing him and those around him for the first time as people, rather than colonials. It had been so long since he'd been treated as a fellow human that it took some time for the idea to become real to him. But when it did, he liked it.

Jake Mullens was right—there could be no half-measures. Once he put his hand to the bandage, there could be no turning back from the scalpel. And someday, if they let him get away with it—or if the villagers managed to keep it a secret—a patient would die. They couldn't overlook that—and it couldn't be kept concealed. Then the Lobby cops would come for him.

Chris Ryan would be on his tail from the first rumor, of course. He did not have to speculate as to what her reaction would be. Others might look the other way and let things slide, if it didn't directly conflict with authority here. But Chris would keep at it night and day. She'd always been a determined girl.

He handed his list to one of the women. "You people will have to learn what to do," he told her. "And you'll have to work like fools for weeks. But there won't be many crippled children—I can promise that much!"

He blinked sharply at the sudden hope in the eyes of the two nurses. But his mind went on wondering how long it would be before the inevitable would catch up with him. With luck, maybe a few months—but so far he hadn't been blessed with any superabundance of luck. He would probably have less time than he thought.

IV

DOC FELDMAN'S luck and the skill of the villagers in isolating their lives gave him more temporary security than he had dared to hope for. In the course of a full Earth-year he had almost come to take things for granted, and to go on living from day to day, moving about from village to village as the calls upon him became more insistent, and doing what he could to help.

The villages had been more or less isolated since the early years of the colonization, when Mars had made a desperate attempt to break free from the remorseless grip of the Space Lobby. Their supplies had been cut off, and they had been forced to fend for themselves. Now they depended for food on the native vegetables and extracted the hormones in crude little chemical plants which would have driven the Chemical Lobby to angry interference, if it had not been at odds with Space Lobby, and hence stripped of most of its effective power.

The hormones were traded secretly to the big chemical plants

on Earth, through secret agents at less than the regular processing costs. Other jury-rigged affairs synthesized much of the village food. But mostly, the people had learned to get along on what Mars provided. Some of them had never seen a coin or a bill.

They maintained a crude sort of inter-village trade, and each village seemed to have its little chief or head man—though Jake Mullens was generally respected everywhere.

Doc Feldman had learned a great deal from his new friends. Money was no longer part of his life and he ate with whatever family needed him. He had, in fact, slipped almost completely into the life around him.

Mostly, he was learning Martian medicine, and finding that his Earth knowledge had been so misleading that he could not blame the villagers for distrusting the Lobby doctors. He had his own little laboratory, where he had finally managed to start making Mars-normal penicillin—a crude and primitive antibiotic, but better than no antibiotic at all.

It was nearly a year after his first contact when he stood very seriously beside Mullens again, smoking bracky weed and watching a youngster playing stickball —one of the first sick children he had treated.

"Sheer luck, Jake," he said. "You Martians are tough—but sooner or later somebody will have an accident, or a sickness so serious that I won't be able to get by on herbs and tricks. I'll have to operate. Someone is going to die eventually, with the little equipment I have. Then . . ."

Jake Mullens nodded slowly. "Maybe, Doc. And maybe someday Mars will get rid of Space Lobby. You'd better pray for that."

"I've been . . ." Doc stopped, realizing what he'd started to say.

The old man chuckled. "I know, Doc. You've been kicking up a fuss every time you come on a case where Medical Lobby has loused things up. I've heard rumors. Whenever you get blazing mad, you want to know why we don't rebel. But you don't really mean it yet. You just can't picture any government but the one you're used to."

Doc had to admit that Mullens had a point, though he was beginning to have even more serious and realistic doubts. The towns under the Lobby were little, self-contained imitations of Earth, but from what he knew they couldn't have lasted a year without Earth.

Here, divorced to a large extent from the Lobbies, the villages were making Mars their own. Their ways might seem strange, but in a crude way they worked—and that was far more than he could say for some of the Lobby

ways. He'd been shooting off his mouth too much perhaps—but there were times when Earth seemed like a monstrous, tyrannical octopus, sucking Mars dry and giving very little in return. Here, at least, he was a doctor again. But under the Lobby he had never been more than a medical mechanic—until he had violated the rules and become a pariah.

"I found a word the other day in one of your books," he commented. "*Peonage*. That's exactly what the Lobby is attempting to enforce on you."

"I found it myself years ago. But I sort of hated to talk about it too openly," Jake Mullens told him.

For a moment longer they watched the boy, each busy with his own thoughts. Finally the old man shifted his lean frame in the weak sunlight. "Newton village forgot to report a death on time. I hear Doc Ryan has been sweating them out, trying to prove you were mixed up in it. I don't understand why she hasn't reported you back to Earth?"

Doc shook his head. It had puzzled him, too, though he was beginning to think that Chris had decided to wait until she could prove that he was actually practicing. Nobody but Mullens and a half dozen other villagers knew his real name, and there were, moreover, enough herb doctors in the villages to make an additional one of no great importance to the Lobby—unless a specific cure could be charged against him.

"She's started blackballing people," Feldman said, the old bitterness back in his voice. "Anyone found taking treatment from herb doctors in this section will be denied Medical Lobby services. Damn it, Jake, that could mean letting people die out of pigheaded stubbornness."

Mullens nodded, but the dry humor was back in his eyes. "It could mean letting people begin to think about getting rid of the Lobbies. Well, I've got to help harvest the bracky. Be seeing you, Doc."

Mullens slumped off, his old body moving along casually through the little village. Doc watched him for a moment longer. Then he turned down into a narrow root cellar, and made his way toward the concealed room behind it. The room contained all of his crude laboratory equipment.

It was a rare day. There had been no frantic calls for help, and his few patients had been given treatment and had gone home. Now he was free to work on the mystery of the black specks.

He'd run into them again and again—always on the body of someone who had died of an affliction that resembled a normal disease—except in a few puzzling details. Without a microscope, he

was handicapped to a serious extent. But he had taken specimens from nasal drops and tried to culture them. Some of his slides showed promise—though they might have contained nothing but hitherto unknown Martian fungi or bacteria. Mars was arid and almost devoid of air, but plants and a few smaller insects had survived and adapted to what was at best a difficult environment.

Mostly, though, he had to depend on his files of cases and such comparisons as he had. But today there was new evidence. One of the villagers had filched an Earth medical journal from Chris Ryan's tractor, and had forwarded it to him.

He found his black specks mentioned in a single paragraph—under skin diseases. But all the article stated was that investigations in the diet field were going steadily forward, since all cases had been found among people eating synthetics.

He turned the pages quickly.

There was another article on aberrant cases—a few strange little misbehaviors in the classical syndromes. He studied both articles for a long time, wondering. It had to be the same disease. But the diet factor failed to account for the fact that the specks did not appear until the patient was near death. Nor did it account for the hard lump at the base of the neck which he had found in every case he had been able to check.

On Earth they were still using antibiotics based on living cells, and there were always virus diseases. A mutation in either could produce a new disease—and the routine-based Medical Lobby men would discover it only after it began wiping out half the population!

Whatever it was, it seemed to aggravate any other disease the patient had, and quite possibly it made diseases that should have been mild and non-dangerous turn out to be completely and rapidly fatal. They'd called syphilis the great imitator once—but this new symptom-complex or disease entity or whatever it was gave promise of being worse.

He shook his head, cursing his lack of effective equipment. Each month more people were dying with those specks—and nothing was being done to save them. It might prove to be the greatest killer of all time—and he was almost completely helpless.

The concealed door slid open suddenly, and a boy of about fourteen came into the room. "Doc, there's a man here from Einstein—says his wife's dying."

The man was already coming in behind the boy.

"She's powerful sick, Doc. Had a stomachache, fever, and began throwing up. She's had pains

there before—far down on the right side. But not like this."

Feldman learned that he had to question every patient sharply, that he couldn't take things for granted. It applied to the relatives of patients too. "Was she born in a hospital?" he asked.

The man shook his head. "Nope. Her ma just had her. You might say they forgot to report her."

Feldman nodded. He kept his voice level as he promised to hurry, but it was a full minute before the shock wore off, and he began packing the few things he'd laid away against the day when such news would come. Appendicitis—an advanced case! And that meant he'd have to operate.

He riffled through his stores, calling out loudly for Jake Mullens. Someone must have heard him, because the old man came in a second or so later. "I'll need more of that narcotic stuff—a lot more," Feldman said. "I'll need it fast."

"I can't help you there, Doc." Jake's eyes seemed to cloud as he realized what must lie behind the request. "The distilling plant broke down. Doc, you'd better not think of operating. We're mighty glad for what you *can* do. Don't try the impossible."

"Either I'm a doctor, Jake—or I'm not." Feldman said. "We'll get something in Southport. There's one way—if you'll take the chance. Ryan has a small dispensary!"

For a second, Mullens' expression went blank. Then the little crows' feet around his eyes deepened, and the dry chuckle was back in his voice. He flipped up his thumb and went out at a shuffling run, gathering up Lou and the man from Einstein before Doc could reach the tractor.

It was a silent ride. The sick woman's husband—George Lynn—took the wheel, and he was in no mood to waste time. Doc and the other two sat back, drawing on the familiar bracky, each busy with his own thoughts.

It had been bound to come, sometime. On Earth, tonsils and appendixes were removed at birth, but no such precaution was even taken on Mars. And if it hadn't been appendicitis, it would have been something worse. All Feldman could do was hope that the inflamed organ wouldn't burst before he arrived. He had enough penicillin to stop peritonitis—if it could be caught in time.

He wasn't aware they had reached Southport until the tractor stopped and Jake Mullens began giving orders. Lynn was too upset and Jake too well known to help, so Feldman told them to wait in the tractor, wearing aspirators. The plan was a simple one. Lou would go to Christina Ryan with a sad story of his wife's

sickness and Feldman would try to guess where the drugs were and quickly gain possession of them.

Lou went out at a run, and down a little street that had tried, without too much success, to ape an Earth-city's suburb. Dr. Ryan's house was near the middle of the block. He ascended the porch swiftly and grabbed for the bell cord, just as Feldman slipped cautiously around to a side window.

Apparently Chris answered the door herself, for after a moment Lou stamped his feet to give the agreed upon signal. Feldman heard the door close again, but he could see nothing. He decided to chance it. The heavy knife in his hand sliced into the plastic window, and cut sharply downward, while air swooshed out in so savage a gust that the stuff was torn free as fast as he could separate it from the window-frame. Before him, he could see a white closet that indicated he'd have no trouble finding the dispensary.

He forced the doors with the same knife. The anaesthetic would have to be something he could find at once, something safe for use on Martian-normal bodies. Ether would do. He searched three shelves upsetting bottles, groping in frantic haste until on a small phial the "ether" label leapt up at him.

A muffled cry sounded behind him. He swung about to see Chris Ryan writhing in Lou's firm clasp. Her sharp heels were beating against the big villager's shins, but her eyes were centered in fury on Feldman.

He shrugged, and started to circle around her toward the door, glad that Lou had grabbed her in time.

One of her heels came up sharply, kicking at the bottle in his pocket. He sidestepped, and continued on toward the door.

Lou clipped her expertly, finished fastening her aspirator, and tossed her onto a couch. Feldman turned in the doorway and said, very quietly, "I've got what I came after, Lou—thanks to your alertness. Don't feel sorry for her."

Back in the tractor and heading toward Einstein, Mullens dropped a surprisingly gentle hand on Feldman's shoulder. "Sorry, Doc," he said.

Feldman shrugged. Chris' recognition of him had been bad luck, but it wasn't too important. She still couldn't prove anything —though she would almost certainly do her best now to make him answer to the Lobby, perhaps with his life.

In Einstein, he found the sick woman running a high fever, and moaning helplessly. The appendix had ruptured, and it seemed to him at first that the case was hopeless. Feldman had treated her before, and he knew that she had almost no resistance to disease, or strength to meet it. He moved his

head slightly at Mullens' inquiring look.

The older man pleaded, "Don't do it, Doc. Lynn will agree!"

"There's still some chance," Feldman told him brusquely. He threw clean sheets across a table and tested the single light in the center of the room. "I'd like to be alone when I operate," he said. "This isn't exactly aseptic, anyway. You can start boiling water, if you want to be helpful."

He frowned as he soaked a piece of cotton with ether and held it to Mrs. Lynn's nose. He'd have to judge the safety margin by guess. He waited until her breathing became subdued and regular. Then he picked her up gently, and carried her to the table.

His instruments were homemade, his sterilization by necessity crude. But it was too late now to worry about that. He made the incision hastily. The light was dim, but not dangerously so. Cold sweat trickled from his forehead. Only his hands were steady as he removed the diseased and torn appendix, and began cleaning out the pockets of infection, shooting in all the penicillin he had.

She was still unconscious when the door opened. He thought at first it was Lynn and he turned to give the man what reassurance he honestly could.

But it wasn't the husband of the stricken woman who had come through the door. Chris Ryan stood there, ripping off her aspirator, her eyes darting to the sheeted figure on the table, and then back to him.

"You stupid, blundering imbecile!" she said, her voice trembling with rage. "I tried to save you! I drove here with a splitting head after what you did to me—in the hope of stopping you in time. But you had to operate! Now I arrest you in the name of the Med—"

Mullens' voice cut her off, its quiet flatness stronger than her anger. "You've got it a little wrong, ma'am. Dan Feldman ain't on Earth now. Out here we stick by our friends. Lou, watch her."

She had drawn back to the door, but there was no fear on her face. Her hand went into her jacket and came out with a small automatic.

"I brought friends, too," she said. "Seven bullets!"

Mullens shook his head reprovingly. "Bad figuring. One of us can get you while you're getting the others—and you'd look plumb unhealthy after your neck was wrung!"

"You . . . you would!" she decided. She studied the situation, backing toward the doorway. "But you wouldn't stop me from leaving."

"Nope," Mullins admitted.

"And with this!" Her other hand flashed up, and something blazed hotly for a second. She

was gone at a run toward her tractor, waving the little camera triumphantly, before their eyes had recovered from the flash.

Doc Feldman shoved the others back as they started after her. It would do no good, he explained. Her Lobby tractor was faster than their jalopy. He didn't even listen to their attempted words of comfort.

his makeshift room, was soon packing his most vitally needed possessions. The council the night before had argued about him for hours. Word had apparently reached the chiefs or nominal heads of most of the villages in the vicinity and they had begun arriving within an hour after his return from Southport.

Either they had radio sets he

"Sure, you can hide me, for a while—but not against the all-out efforts of the Lobby police. We'll talk about that later. There's a sick woman."

Then he saw that he was wrong. Mrs. Lynn wasn't sick any longer. She'd died quietly during the excitement, without ever regaining consciousness . . .

The next day, Dr. Feldman, in

didn't know about, operating on a disguised frequency, or the speed of the runner-rumor system was faster than he'd imagined it could be. He couldn't accept the radio-theory—it would have required more tubes than Earth had ever shipped out.

But in the long run, they had accepted his own decision.

"I'm not going to hide com-

pletely," he assured them. He'd been as surprised as they were by the statement, but he'd known from the first that it would have to be that way. He'd become something of the doctor he'd always wanted to be—and he wasn't going back to being a whipped cur again.

"I'll move every day, if it will keep you happy," he told them. "Dr. Ryan may find me inside of a week, but that is a risk I'll have to take. From now on, if you want decent medical care, forget about me and get busy figuring out a way to throw off the control of the Lobbies!"

He stopped for a moment in his packing to consider the small bottles which might just possibly contain a culture specimen of the unknown thing responsible for the black spots. They'd need body heat, he told himself. He shoved them into an inner pocket, and went on gathering his things together.

The door slipped back, and Lou let in a girl of about fourteen, with tears streaming down her face. She stood staring at Feldman in mute agony for an instant. Then her voice broke on a strangled sob. "It's—it's mama!"

"Where?" Feldman asked.

"Leibnitz," Lou said. The big villager had shaved his face to prevent Chris Ryan from recognizing him, but his voice had lost none of its huskiness.

Leibnitz was near enough. Feldman gathered up his scanty equipment, and went out to the tractor, motioning for the girl to join him. She climbed into the back, sobbing continuously, and not once during the trip was he able to quiet her down. The house was on the outskirts of the village, surrounded by a low stone fence.

Dr. Ryan and three of the Medical Lobby police were inside, waiting. There was a small soldering-iron plugged into the wall. It was red-hot, but apparently a simple threat to the girl's mother had been enough to assure her complicity—no actual injury had been inflicted.

"I knew you'd answer that kind of call," Dr. Ryan stated coldly.

He looked at her for an instant in tight-lipped loathing. Then he shrugged. "Naturally you knew, Chris. Congratulations! My patient died. You're lucky."

"Your patient was dead when I snapped the picture. I got a very good print—invaluable as evidence."

"I suggest you frame it and keep it on your wall to comfort you when you feel lonely," he said.

She slapped him across the mouth. Then she twisted out through the door quickly, heading for her tractor.

When the Lobby police emerged from the cottage with Feldman handcuffed between

them the villagers revealed by their sullen faces and hostile gestures that they hadn't known of the trap.

There was a trail of battered police tractors spread out across the dunes, following Chris' tractor. Obviously word of the betrayal was spreading, but it was too late now for any effective help. More police were arriving and Chris had evidence enough, and to spare.

V

JUDGE BEN WILSON might almost have been Mullen's brother. He was several years older, and his hair was a white halo around his head. But the same expression lay on his face. Almost everyone knew he'd been the black sheep of his family since his father had relinquished the presidency of Space Lobby to a second son, whose character had been more to his liking. Wilson had been kept on Mars, safely out of his way, his authority only grudgingly upheld by the Lobby.

He discarded the paper he was reading, to stare thoughtfully down at Chris. "This the fellow, Doctor Ryan?" he asked.

Chris nodded. But before she could begin her formal charges he cut her off impatiently. "I already had them drawn up," he snapped. "You've been threatening him long enough, Doctor Ryan. Doctor! *Hnnf!* You'd be a lot better person home somewhere—minding a flock of your own babies." He turned back to Feldman. "Well, young fellow—so you're the famous Doctor Feldman. I've heard things about you—one way and another. It seems there are about fifty serious crimes charged against you. Okay. You're booked already, and your trial comes up day after tomorrow. It would be kind of a shame to lock you in Southport jail—a man of your importance. We'll just keep you right here in the pending-trial room. It's a lot more comfortable."

Dr. Ryan had been boiling inwardly, and now she seemed unable to contain herself. "Judge Wilson, I've heard of your methods. You may do as you think best in local affairs. But this involves the Medical Lobby and Earth. I demand—"

The judge raised his hand in a warning gesture. "Young woman, you don't *demand* anything here. You're forgetting where you are. On Mars every legal move or decision involves *Space* Lobby and Earth! If they can stand me, I guess our friendly allies over in Medical will have to. Or would you be better pleased if I held trial right now and found the defendant not guilty?"

"You wouldn't dare!" Chris exclaimed. Then her face sobered, and she turned pale, as if appalled by her own audacity. She

nodded meekly, before the judge could bang down with his gavel. "You *would*. I apologize, your Honor. Medical is satisfied to leave things in your more experienced hands."

Judge Wilson smiled, while Feldman shook his head, telling himself that if this unusual man had been president of Medical Lobby life would have been far simpler!

"Court's closed for the day," Wilson said. "Doc, if you'll promise to be a good boy, I'll take you back to the cell. It's right next to my study—"

Taking Feldman's puzzled nod as assent, he began shucking off the robe, while Chris Ryan moved out with the police, her voice sharp and embittered.

The cell was escape-proof enough, and a lot more comfortable than the one which Feldman had occupied while awaiting trial on Earth.

He tried to thank the judge, but the old man merely grinned. "I've done you no great favor, son." "I just enjoy seeing that little termagant taken down. At my age, amusement's a source of joy. But don't think I won't throw the book at you—if the evidence proves you guilty. My methods may be a bit unusual for this day and age. I always did like the courtroom scenes in early twentieth century novels by that fellow Thorne Smith.

"But Space Lobby never had any reason to question my decisions. That's why I'm still here. My brother would be happy to see me kicked down to being a mere clerk, if he could endure having a pariah in the family. Is there anything I can get you to help you kill time?"

"Sure," Doc Feldman told him, grinning in spite of his bitterness. "A good pocket electron microscope—and a biology lab."

"Umm. How about a little two-thousand power visual mike and some stains? Will that do you? Don't think for a moment I haven't got them, young man. I was studying Martian plants before you wore diapers. Wait!"

He was back almost at once, passing a large oblong metal box through the bars of the cell door, along with a smaller box. He brushed aside Doc's thanks, and moved off, his bedroom slippers slapping against the hard floor.

Feldman stared after him, telling himself it wouldn't make much difference whether Wilson or some harsher judge found him guilty. In either case, his life would be short. But it was harder to feel gloomy and beaten in the presence of such company. He opened the microscope box and took the little instrument out. It was in perfect condition and must have cost a fortune.

Feldman's hands trembled as he transferred a tiny fragment of his

culture to a glass slide. The sunlight streaming through a barred window supplied sufficient illumination, and he carefully adjusted the microscope on a table just under the window, juggling with the magnification until a faint smudge, pale blue in hue, came into view on the slide.

He reached for the stains. He was working more methodically now, with greater self-assurance. One of the stains was starred in ink. He tried it on a hunch, assuming that the judge had used it on Martian plants successfully. It was completely useless. But his fourth try gave him results, against all the laws of probability.

Under the highest magnification he could see a few significant details. There were dozens of cells in his impure culture, but only one seemed completely unfamiliar. It was a long, worm-like organism, sharpened at both ends. In its precise center, the three separate nuclei which were typical of Martian-life forms in general showed up clearly. They were surrounded by dozens of little rod-like squiggles which he sometimes seemed to see clearly and sometimes could not discern at all.

It was incredible! No Martian micro-organism had ever proved harmful to men, even to men who had adjusted their metabolism to Mars-normal. Yet he felt convinced that this wasn't a mutated antibiotic cell or a virus. It was a new disease, completely different from anything ever observed before. And it would in all probability prove to be a disease against which all of Earth's centuries of work on bacteria would be valueless—the first Martian disease.

He reached for another specimen and began preparing a fresh slide. The micro-organism might not be the cause of the black spot disease. The only test would be to find it in *all* of the samples he had, and to find no other unfamiliar life-form on at least a dozen slides. Until then, he had no right to believe with conviction that it was more than another contamination of his crudely-made cultures.

The sun went down before he could finish his work on the new culture. When the light in the cell became too faint to work by he put the microscope aside. His trial would not take place for two days. He'd have time enough to complete his studies before he was taken out for execution. If he could find some way to pass the knowledge on to others—

He was no nearer to solving that problem when the trial commenced than before. But he was now completely sure about the cause of the disease. It *was* Martian. Crude as his cultures were, they had confirmed his original belief conclusively.

The little courtroom was filled. Most of the men were bearded, and rustically garbed, indicating

that the villages had turned out in full force. Lou occupied a seat toward the front, and Jake Mullens was seated directly behind him.

Feldman forgot his own peril in his concern for Jake. He frowned at the old man, and received an innocent-eyed smile in return. He started toward the seats, but was brought up short by the bailiff.

"Court's in session," Wilson announced. "I've seen Dr. Ryan's picture, so I suggest you don't waste time on that. Doc, are you represented by council? Last I knew you were dead set—"

Jake Mullens' flat voice interrupted. "Your Honor, I represent the defendant. My credentials may be a bit old. But I think you'll find them in order."

Chris Ryan stared at him in anger, but the judge grinned. "You never got them voided up in spite of that little—ah, misunderstanding—thirty-five years ago. But I thought you were a witness, Jake. Police thought so when you turned yourself in."

"Never said I was," Mullens answered. "Though I'll be glad to testify as well, if council for the Lobby wishes."

Dr. Ryan started to protest, but the florid man who was legal council for Medical Lobby shook his head vigorously, and bent over to whisper in her ear. After a moment, he straightened. "No objection to council for the defense," he said.

"You're a fool, Matthews," the judge told him. "Jake was smarter than half the rest of the Legal Lobby—before he went native. He may be out of practice now. But he's still smart enough to defend his client with brilliance. . . . Okay, let's start things."

Feldman could hardly believe his ears. Such judicial candor was out of keeping with everything he knew about legal procedure on Earth. It was hard to believe the Lobbies would permit such a Puckish farce in a major trial. And yet—it wouldn't have been out of keeping with general behavior in the villages. Were the Lobbies sitting on a powder-keg after all? Could their very ritual and routine be driving the few who could risk it to an opposite extreme of defiance?

He puzzled over it while Chris Ryan and her council began building up the case against him, citing as evidence his former behavior, and adding a dozen grave new charges. Now, surprisingly, Wilson was coldly efficient. Jake Mullens sat quietly smiling, but making no protest. Finally, Medical Lobby council sat down heavily, and Wilson nodded toward Jake.

"Will the defense state its case?" he asked.

"It will," Mullens said. He had moved forward lazily, without bothering to look at Feldman.

"My client's case is just this: Dr. Ryan saw Daniel Feldman, myself, and another man in the room where Mrs. Lynn had just undergone a fatal operation. Dr. Ryan also knew that Daniel Feldman was a pariah as a result of alleged malpractice on Earth. All this the defense readily admits. The photographic evidence we do not dispute. But Dr. Ryan has not offered any evidence beyond this. We have only her unsupported word concerning events where she admits she has only supposition to go on. There is no proof that Daniel Feldman performed an operation, or in any way assisted in one. There is no proof that he has practiced or attempted to practice medicine. There is no proof that Daniel Feldman attempted to burglarize or did burglarize Dr. Ryan's residence or that she was ever attacked by him.

"As for the pariah aspect, that has no bearing on the present case. Without such proof it has no bearing. And there is no law on Mars against the existence of pariahs here. If the Medical Lobby council has any evidence to present, it should have been presented before this."

Mullens paused and smiled at the florid council. Then he turned back to the bench. "The defense is prepared to produce witnesses who will testify that Daniel Feldman came to the scene of the crime only to drive me there—and that I had been erroneously summoned as a recognized herb doctor. We're quite prepared to prove that we had barely entered the house of the Lynn family and had found the crime already accomplished when Dr. Ryan arrived."

"Perjured testimony!" Chris shouted. "You can't—" Her council pulled her back warningly, again whispering in her ear.

Judge Wilson glanced from Jake Mullens to the Lobby lawyer. He shook his head. "Case dismissed for lack of evidence," he announced. "Court's adjourned—and anyone who wants to start a fight now can go right ahead."

Chris Ryan was on her feet at once. "Technically we may not have proved our case," she cried. "But we will. Everyone knows Feldman's guilty. Medical Lobby has spent a hundred years building up safeguards against such dangerous incompetents. He's killed one person already. There may be more. But not if we can prevent it."

There was cold fury in her eyes. "We'll work night and day until we secure proof that even *this* court will accept. The Medical Lobby has dealt with such dangers before. It will not fail this time. And meanwhile, any village which gives hostage to pariah Daniel Feldman will be denied all the services of Medical Lobby doc-

tors and hospitals for a period of one year!"

"Which means they will have the right to turn to any help they can get," Feldman told her. "You've had your say. Now I'll have mine. You don't know it yet, but there's a plague here—and it has spread to Earth. It may be the worst plague we've ever fought. You'd be well advised to start working night and day to find a cure for that. Look at the slides in this box, if you don't believe me! They explain the black spots you've been blaming on diet. The first Martian disease!"

Jake Mullens had come to his feet. He was signaling frantically toward Feldman, but the Medical Lobby council was the first to shout through the confusion.

"Your Honor! I charge Daniel Feldman with undertaking germ research without a permit. And I ask that the tape-recording which is still being taken—if that light means anything—be used as evidence!"

Mullens shook his head despairfully as Judge Wilson began rapping for order, and calling the court back into session.

"You headstrong young fool!" the older man muttered. "No wonder you got yourself pariahed. If you know the rules of your Lobby and are a member in good standing you can do anything and the Lobby'll protect you against all comers. But even a Lobby member would have to be mighty careful not to violate one rule. And you're a pariah! Research without a permit! Why didn't you just charge yourself with murder?"

Feldman had endured too much to be shocked any longer. His mind was like a phonograph, accusing him of being incredibly blind and a fool over and over.

Mullens had turned back to the bench. "Your Honor, there's one more unanswerable law. We've got about sixty men here—and the other side can't muster a dozen. There's an old law that says sixty men are superior to twelve. Come on, Doc. *We're going home.*"

Feldman shook his head, cursing the men who suddenly were standing up with crude weapons, outlawing themselves for him. He'd be no good to them, and they couldn't hide him forever. It had been his own fault . . .

Nobody listened. Three of the villagers picked him up and the rest surrounded him as they carried him out of the courtroom toward a waiting tractor.

VI

FELDMAN SAT perched on a stool, staring at the microscope he had carried off with him, but making no effort to use it. He glanced around the room idly, lighted another bracky weed, and sighed again. Maybe he'd be bet-

ter off if he had no friends, he told himself bitterly. Back on Earth, at least, he had managed to avoid causing trouble for others through his own stupidity.

The room lay thirty feet away from his former laboratory in Mullens' village, though the tunnel that led to it came from a root-cellar several hundred feet beyond the old one. It was bigger than his former room, but remarkably similar to it in other respects. The safest hiding place, Jake had insisted, was always just a short jump away from the place your enemies had raided. They'd take a look first at the old hangout, and then hunt the countryside over. But they'd never think of looking right next door.

It was a nice theory, but he doubted its validity. He frowned as he watched Lou sleeping peacefully on a cot set against the opposite wall and saw Jake's big, awkward hands delicately carving a statue out of soft stone. What good would it do if Jake was right, for that matter? The three of them would end up in prison, and remain behind bars until they died of old age.

"What about the others?" he asked dully.

"Nobody was watching them." Jake said. "Beards look alike unless you study 'em. They've gone home, and they're carrying on the same as usual. Stop tearing yourself to bits, Doc."

"I'm trying to put myself together—honestly," Doc told him.

"Yeah, sure. Like you did on Earth. Do some fool thing and then sulk for six months. Sometimes it takes a fool to get things done. Wise men just keep waiting for a good time. Anyhow, Medical council was an idiot, or he'd have nailed us. We went in expecting we'd have to drag you out this way. Now we have another plan."

Feldman grimaced. "It sounds promising."

"It isn't—but maybe it'll work. People don't care about speeches but they get mighty riled up when the man who saved their kids gets kicked around for it. Judge Wilson tries to laugh it off, I go native, and you make a fool of yourself. But we may still outlive the system. Forget it. How's the bug-hunt?"

Doc grunted in disgust and swung back to his microscope for a second. Then he reached for another bracky weed. "Why don't the people revolt, Jake?"

"They tried it, though maybe the histories play it down. Earth shut off shipments the first time. Next time the villages had an answer to that. But the cities had to fight for Earth or go without supplies. In the end *they* beat us. Anyhow, Earth can always send over unmanned space-rockets equipped with nuclear warheads."

"So it's hopeless."

"Not completely—not if we let the Lobbies destroy themselves. We could do it by cutting off all Medical services and forcing them to the wall. But you'd better go back to the bugs, Doc."

Feldman reached for the microscope, then pushed it back. He knew everything that it could tell him now. He had to attack the disease from its progress next, had to concentrate on case histories. He picked up the pile of reports which were being sent in from the villages and the big ruled chart which contained vital regional data. With time enough, something important should emerge from that. But he couldn't keep his mind on it.

Mullens dropped down on one of the narrow cots, letting his long legs dangle. Except for the puffs of bracky smoke, he might have been asleep. "You were having nightmares about your bugs last night, eh?" he asked.

"Was I?" Feldman frowned over his notes, trying to remember. Then he grimaced wryly. "I was dreaming the bug killed off the old Martians and waited around in their ruins to do the same to us. I kept digging deeper, getting nearer the danger zone . . . something like that."

"Durwood!" Jake had propped himself up on an elbow, staring at Feldman. "Say, that's a thought!"

Feldman scowled. "Clive Durwood, you mean? The archeologist who dug up those ruins you showed me?"

"That's right. Before he went back to Earth and lived off his fame. He came here again three years ago and dropped dead in Edison on the way to some fresher ruins. Heart failure, they called it, though it was more like what happened in the case of the two old farmers who ran themselves to death last month. Anyhow, I saw him. I thought his face looked kinda dirty, but it could have been those little black specks of yours. Doc, perhaps some of the seeds he found in those ruins grew! Mars is tough. It has to be. Perhaps that dream of yours was dead true!"

"What about those farmers? Did they ever meet Durwood?"

Mullens lifted an eyebrow and considered. "They must have. He lived in their village most of the time. They were twin brothers. You'll find notes on them there."

He ground out the bracky weed and closed his eyes again.

Doc found the notes after a brief search. The two old men had been nervous and fidgety for weeks. But they had lived by themselves in semi-seclusion, and nobody had paid them much attention. Then one morning both had been seen running wildly in circles. The village had managed to catch them and tie them up, but they had died of exhaustion

within a few hours. Their faces had been spotted, but no one had noticed whether there had been lumps on the backs of their necks or not.

It wasn't a pretty picture. Apparently the disease had an incubation period of nearly fifteen years, judging from the length of time Durwood had been away from Mars. Apparently it had spread from person to person, leaving widening circles between Durwood's first visit and those first infected. Once it reached the dangerous stage, any other sickness could probably set it off, masking some of the original symptoms. But even without help it could kill its victims, apparently driving them madly toward frenzied, senseless physical effort.

Now Feldman pulled his microscope closer, and began examining the slides. He'd tried Koch's method to get a purer strain, transferring his culture to a native starchy root, and plucking off the colony that developed into pure Martian Fever. About twenty of the little bubbles on the slides had been treated with every kind of chemical available to him, before being transferred to new culture solutions.

The chemicals had sometimes seemingly killed the micro-organisms—but the microscope showed that they had all been able to grow again, once they had been supplied with fresh nourishment.

Mars was tough, all right, and Martian Fever could wait for a million years or more to find a fresh victim.

He dug into his notes again, checking through them to find earlier deaths that had left very pronounced black specks. There were more than he had expected —nearly three hundred such cases.

Gradually he transferred them to his charts, and then he went back over the charts more painstakingly, looking for some additional symptoms ten to twenty years before the disease assumed epidemic proportions. There were no rashes or blisters. A few had developed apparent bad colds, but such colds had been reported off and on through their whole case histories.

Only one sympton stood out, about fourteen years before the eventual fatal outcome. The people interviewed about the victims might have been vague about other things. But they remembered distinctly "the time when Jim had the jumping headache."

"Jake!" Doc called.

The old man stirred, and blinked. "Eh? What is it, Doc?"

"What's jumping headache? Most of the victims seem to have had it at one time or another, but I haven't run across a recent case of it."

"Sure you have," Jake told him. "Mamie Brander's daughter

had it two weeks ago. The baby girl, remember? Feels like every beat of your heart's going to rip your skull off—right here. You can't eat, because moving your jaw drives you crazy. The back of your head, neck and shoulders swell up for about a week. Then it goes away."

Then it goes away—for fourteen years, until it comes back and kills you! Doc stared at his charts in sudden horror. The jumping headache was a new and unusual disease—thought to be caused by some unknown virus but hitherto not considered important. Selznik's migraine—according to medical usage. You treated it with hot pads and anodyne, and it went away easily enough.

He had seen hundreds of such cases on Earth! He suddenly realized there must be a vast multitude of people there who had been hit by it. Even the patent-medicine branch of Medical Lobby had recognized it and brought out something called Nograinodyne to use for self-treatment. Apparently it never recurred in the same patient.

"Something important?" Mullens wanted to know.

Feldman nodded. "How much actual control do you have here, Jake?"

"People sort of do me small favors when I ask," Mullens said.

There was a code rap on the door. Jake answered it and shook his head dolefully. "Doc couldn't come if your grandmother was dying, Tom! Don't be a damned fool!"

Mullens shut the door quietly. "And don't ask questions, Doc. You're temporarily out of the pill-peddling business. What do you want, anyhow?"

Feldman considered it. "Some of Chris Ryan's medical journals from Earth when you get a chance through Molly Badger, maybe. I understand you got her a job as maid with Chris, a few months ago. The stuff I really need will be in the safe. But right now, I want every man, woman and child in the village to tell me if they had this jumping headache, and just when—and I'd like the same information from the other villages, as fast as it can be gathered. Finally, I'll need someone to take a letter to Southport to be mailed for me."

He took Mullens' cooperation for granted, and began packing the microscope to make room on the table for a rickety little portable typewriter.

He was still engaged in organizing his ideas when he began addressing the crumpled envelope, and carefully typing the salutation on the grimy paper.

He knew that writing Chris would do no good. She was embittered beyond reason, remorselessly determined to have his scalp. To her, there had always been

nothing but black and white. Against the background of her father's position in Medical Lobby and the propaganda that had been instilled in her since infancy, she would never permit herself to be convinced by anything he might say, and his proof was still sketchy. He'd loved her for those very traits of absolutism and loyalty once, but now—

Feldman knew that the Director of Northport Hospital was a weakling and a fool, but it had occurred to him that a fool will often listen to reason—if he can be frightened badly enough. *Someone* had to send a warning to Earth, where the vast resources of Medical Lobby could be thrown immediately into the task of finding the cause and cure of the disease. If a strong warning could blast the Lobby out of its routine smugness, a solution would almost certainly be found. Then it wouldn't matter quite so much what they did to him. He wasn't foolish enough to believe he could hope for gratitude from them. But he had become almost reconciled that his days were numbered.

Mullens shoved the door open. "Doc, here's the dope—everybody here is accounted for, except you."

"I never had it, Jake." Feldman went down the list, with the scowl deepening on his face. "Most of it occurred about fourteen years ago—you can see just how it spread—in jumps of about a week apart, hitting more people each time. About the only exceptions are the kids. They seem to contract it around the age of three. Eighty-seven out of ninety-one cases!"

He stopped, unbelieving. His statistics indicated that the whole village was now infected, with four probable exceptions, had, in fact, almost reached the end of the incubation period, as nearly as he could figure it. There might be a few individual variations, but most of the village would be dead before the year was out.

"Bad?" Mullens asked.

"The jumping headache is the first symptom of Martian fever, Jake. There can be no doubt."

The old man whistled, the lines around his eyes tightening. "Better make it eighty-eight out of ninety-two," he said flatly. "I'm the guy who brought it here. I used to drive a tractor for Durwood!"

There was a constant commotion all afternoon as runners went out to the nearby villages and came back to report. Feldman listened for a while, but the sameness of the account made listening pointless.

He needed animals for investigation—guinea pigs, rabbits, mice, any small rodents susceptible to the disease. Real research was impossible without living blood for culture mediums. But Mars had

no animal life between low types of native insects, and human beings.

The human population was as useless as the insects, even if he could practice on it. Those who were not immune had already become infected.

He needed an electron microscope, too. He was sure that the disease must travel through either the bloodstream or the nervous system, but he had found positive evidence only in the hard lump at the base of the neck. He knew, also that it was a fair-sized microorganism. Beyond that, he could determine nothing. The scraping from the black specks had proved valueless. He was sure that the specks contained the disease cell in some form, but was unable to prove it.

He stared through his microscope until his eyes ached. There were tantalizing suggestions of filaments around the nuclei which might be the answer, if they were not illusionary. Possibly they broke out of the cell and circulated in the blood stream, to do the real damage. They might even be the true form of the germ—the bigger cell only a transition stage. He knew that there were a number of diseases that involved complicated changes in the germs that caused them.

He finally put the microscope away and buried his head in his hands, trying to accomplish by pure thought what he couldn't accomplish in any other way. But even there, he lacked the training. He was a doctor—not a Martian biologist. Research training had been taboo in Earth schools, except for a favored few.

By night, figures were in for most of the other nearby villages. There was minor differences in the time and incidence factors. One lucky village had eight adults who had never been affected. Doc totaled up the figures, and copied them down at the end of his letter.

"Less than a hundred safe out of two thousand," he told Jake as he handed over the sealed communication. "We've got the worst plague on our hands in all of human history—and nobody even knows it yet."

"They're beginning to guess," the older man said grimly. "We've had two more cases of men going crazy and running until they drop. I heard there was one in Southport, too—though nobody knew the identity of the victim."

His lips tightened. He picked up the envelope and went out through the door, his figure neither more erect nor more slumped than usual.

Doc wondered whether Mullens realized he was under sentence of death—or whether he just didn't care. There was no way of knowing, but he suspected that Jake had courageously accepted

the inevitable, and had gone on with his job notwithstanding. It would have been hard to believe once, but Feldman had aged and changed in the last few months. His personal destiny seemed less important to him now, other things far more urgent.

Maybe men wouldn't go the way of the ancient Martians. There were a few immunes, apparently. If that immunity were hereditary it might save them. If not—

Mullens came back with a sombre look on his face.

"Start packing, Doc," he ordered. "Molly just got some bad news through to us. The Medical Lobby is starting out to comb every village with a fault-sounder. These underground places will show up like sore thumbs. They've got us pegged for the first visit tonight!"

VII

THREE DAYS later, Doc Feldman saw his first "runner".

The battered old tractor was churning through the sand just before sundown, heading toward another one-night stand at a new village. Lou was driving, while Doc and Jake Mullens brooded silently in the back seat, paying no attention to the colors blazoned over the dunes. The deadly cat-and-mouse game was getting them. There was no real assurance that the village they were approaching might not be the target the Lobby had chosen for the next investigation.

Their hair was crudely dyed, and all three wore beards made from a vegetable fibre that looked like hair at a short distance. But they had no great faith in the disguise.

Lou braked the tractor to a sudden halt, and pointed. A figure was running frantically over one of the low dunes with the swollen red sun behind him. At first he seemed to be heading toward them, but as he drew nearer they could see that he was moving with no definite direction in mind. He simply ran, pumping his legs frantically as if all the devils of hell were after him. His body swayed from side to side as if in utter exhaustion, but his arms and legs continued in rapid motion.

"Catch him!" Mullens ordered.

Lou nodded, and started the tractor after the miserable figure. It halted squarely in the runner's path, and almost simultaneously the figure struck against the vehicle and went toppling over with a despairing shriek.

The legs went on pumping, digging into the dirt and gravel. But the man was too far gone to rise. Jake and Lou picked him up and helped him through the doors into the tractor. Doc yanked off the aspirator.

The man had apparently been relieving his torment by giving

voice to some kind of ululating cry, unheard through the thin atmosphere. Now it was only a pitiful whine that rose and fell weakly as the crazed kicking of his legs continued. Sweat had once streaked the haggard face, but now it was dry, and blanched to a pasty grey.

Doc injected enough narcotic to quiet a maddened bull. It had no effect, except to upset the rhythm of the poor devil's spasmodically jerking limbs for a moment. It took five more minutes for the man to die.

The specks were larger this time—the size of periods in twelve-point type. The hard lump at the base of the skull was as big as a hen's egg.

"From Edison, like the others we heard about. His name's Jack Cooley," Jake said, in answer to Doc's unspoken question. "Durwood spent a few weeks in Edison on his first expedition. It's not surprising Edison's getting the worst of it."

Doc pulled the aspirator mask back over the dead man's face, and they carried him out to the sand beside the path they were following. They couldn't risk returning the corpse to Edison.

Feldman knew that this was only the primary circle of infection, direct from Durwood. The second circle would be at least five times as large. The infection would spread rapidly from village to village. It was mostly local now—but it wouldn't stay confined to any one locality.

If the Medical Lobby recognized its deadliness too late, and failed to publicize the long incubation period there would be terror over both Earth and Mars within a few weeks, at most. Doc had read accounts of the black plague in the European Middle Ages. That historic tragedy, ghastly as it was, had involved a mere quarter of the population—and had been confined to a relatively small area.

He tried to picture the blind panic that would come when the simple village people found that their learned Lobbies couldn't help them. Men would die without waiting for the plague to kill them. They'd flee blindly from one running figure to another until they dropped from sheer exhaustion. Somebody would begin shooting the runners, and those who felled the runners would become living targets themselves.

It wouldn't do any good to spread the word that the disease was no longer contagious, that the contagion had taken place more than a decade before. The wild nervous excitement that overcame the victims would be the same thing as a newly contracted disease in the public mind.

Feldman climbed slowly out of the tractor, wearily lugging his

small supply of equipment, while Mullens made arrangements for them to spend the night in a deserted house. He continued to tell himself that there was little use in warning Chris.

But he knew now that he could never sleep until he tried. She'd be near the first raging center of the plague, and eventually her own eyes would convince her of his honesty. With luck, it might not be too late to establish some measures of control.

He dragged out the typewriter again, found a few remaining sheets of paper, and began pounding away at his letter. It was a long one this time, and darkness had fallen before he sealed it and asked Jake to see that it was delivered by a villager to Chris Ryan's door.

"Better get some sleep, Doc," Mullens suggested. "You're a good deal closer to exhaustion than you think. Are you absolutely sure you can't find a treatment in the stuff we brought you."

Feldman looked at the supplies spread out before him, and shook his head. He didn't even have a lead—he'd been over every chemical and combination a dozen times without results.

He snapped the drug case shut, and hit the rude table with his clenched fist. "There are other supplies. I'm going after them. If you can borrow a gun, I'll take it along. Do you have any signal which will enable me to get in touch with Molly?"

"Three raps on the rear left window. I'll get Lou."

"No!" Doc came to his feet, reaching for his jacket. "They're looking for three men. It will be safer if I go alone. Besides, I'm the only one who'll know what to pick out of Chris Ryan's supplies. How about the gun?"

Mullens found one somewhere —an old single-shot pistol, with a few extra loads. Doc pocketed it, and waited for Lou to bring up one of the smaller tractors.

"You'd better start spreading the word—everything we know," he advised. "If you can convince them they're either safe or already doomed, it'll be better than having them going crazy trying to avoid infection."

"Most of them know already," Mullens answered. "And damn it, get back here as soon as you can, Doc. If you find you can't make it safely, turn tail quick."

Southport seemed normal enough as Feldman drove through its brightly lighted streets. The two stereo houses were still open, and the little shopping section was doing a brisk trade. He stopped once to pull a crumpled copy of Southport's tiny newspaper out of a disposal can, but there were no alarming headlines on the front page.

As usual, however, the editorial

revealed a great deal. It seemed to say very little, but by lauding the role of the Medical Lobby on Mars it was obviously attempting to pour oil on troubled waters. He turned to the death notices and found that the cause of death was no longer being listed. Medical knew that something extremely serious was up, at least.

There were a couple of lights on in Chris' house. He parked the tractor in shadows and slipped cautiously up to the lower right hand window, knocking quickly three times. Almost instantly the shade was drawn back, and he caught a brief glimpse of Molly's white face staring out.

She opened the outer door a second later, to let him slip in. "Shh," she whispered warningly. "The doctor's just gone to bed. Oh, Doctor Feldman. What can I do?"

He tried to smile reassuringly at her. "Just let me in, Molly. Let me in, and forget I was here. I'll be as quiet as I can."

She looked doubtful, but opened the inner door.

Chris Ryan stood just across the room from her, buttoning her blouse.

"I knew you'd come here, Dan," she said quietly. "I found your note an hour ago. I guessed you'd come to pick up the drugs you'll need. All right, Molly. You can go to bed now."

Feldman drew his pistol slowly as Molly moved away. She looked back at him indecisively, but he dismissed her with a nod. She went eagerly then. Chris made no move when she saw that the gun was centered on her.

"The electron mike's in my office," she said clearly. "I've got everything else packed that I could think of, Dan. And I don't have a gun this time. Go ahead, see for yourself."

His left hand verified the truth of her statement, as she turned slowly about. At his urging, she preceded him through the house, until he was satisfied that they were completely alone. When they came to the office he discovered that the supplies had been packed. She had not lied to him.

"There was an extra battery for your aspirator that first night, Dan," she told him. He jerked sharply toward her, his eyes wide and incredulous.

She nodded. "I put it there, together with the wallet of money."

"There was no wallet!"

"It was right between the batteries! If you failed to find it, it must have fallen out."

The extra battery had puzzled him. He'd almost forgotten it but now he tried to think back. He'd been too groggy, too dazed to carefully search the aspirator pack. Could she be telling the truth?

She seemed to anticipate his

thought. "Why do you think I couldn't stand seeing you reduced to utter wretchedness, Dan? Why do you think I made sure you'd be grounded on Mars, where you wouldn't have to risk your life as a spaceman? Why do you think you weren't picked up when you first became a herb doctor? I didn't drive to the Lynn home to arrest you. I went there to stop you from making a tragic mistake. Otherwise, I'd have taken the police with me.

"But when you set yourself up as God, and became a traitor to your own Lobby for the second time—when you began butchering innocent women—then I fought you, Dan. I'm pledged to fight any of the monstrous things from which the Lobbies saved us. 'If thy right eye offend thee, pluck it out and cast it into the fire.' "

"What about the villages where people will die because you cut off medical service?" he asked grimly.

"It will be for their own good. The democracies worried about the few instead of the many—and look what happened. The Lobby policy isn't something *we* make, Dan. It's what saved the world from catastrophe. Only now—I don't know. I read your letter. I've seen some of the deaths. I think the Lobby is—mistaken, that you're right this time. And when I'm convinced the Lobby is wrong, I'll fight against it just as determinedly as I would fight against you. Where are you going with all this?

"You don't convince me, Chris—except for the battery, which you'd hardly know about otherwise," he said. "But with time as short as it is, I'll have to risk your help. But I must warn you. If you make one false move, I'll kill you before they get me. Is that your tractor outside?"

Without replying, she snapped on an aspirator, and picked up one side of the electron mike. He took the other. Then they lifted the cases of chemicals and equipment, and carried them out of the house.

With everything stowed away, she waited in silence while Feldman went to his tractor and collected his equipment. Then she ascended into the front seat of her own machine, and gestured toward the rear seat. Feldman climbed up after her and gave her instructions as to their destination. The Lobby had already located his old laboratory room, so he felt reasonably safe in taking her there.

An hour later they were unloading the tractor and carrying the stuff into the laboratory, exactly as it had been carried from her office. It was now long past midnight and everyone in the village was asleep. Feldman was glad that no one had seen them drive up. After the trial at South-

port, the village had little love for Dr. Chris Ryan.

She shuddered when she saw the baked clay walls and sagging ceiling of the room. "Primitive," she commented.

He could have told her that the flop-houses in her own home city were just as dismal but he decided to keep his thoughts to himself. He plugged in the electron mike, and began laying out his collection of smears and cultures. Next to them he placed the neat displays she had furnished.

"You might fix a film from those two smears—and one from the biggest culture jar," he suggested. He moved to the opposite side of the table and started adjusting the mike to the cockeyed voltage and cycles of the village generator.

"What's the idea behind it?" she asked.

He outlined his puzzle over the filaments around the nuclei. He discussed his difficulties in great detail, and suggested several remotely possible ways of destroying the bug. She let him talk, with only an occasional comment. He'd always worked well with her, and now he discovered to his surprise that her presence still stimulated him.

She finished with the films, and passed them to him. Doc felt the skin on his palms grow moist as he inserted the culture film into the chamber. He had the electron lenses set for twenty-thousand power, but a quick glance convinced him that fifty-thousand would be better.

The filaments weren't illusionary. They were clear and distinct now. He readjusted the lens, unconsciously carrying on a running comment. Chris had sensed his worry, and had retired to a chair across the room.

Suddenly he gasped. Each of the little filaments carried three tiny darker sections—each was a cell, complete in itself, containing the typical Martian triple nucleus!

He put the film that she'd prepared from the nerve tissue of a plague victim into the chamber next, but only wasted a quick glance at the screen. The filaments were there, thickly crowded among the nerve cells. They *did* travel along the nerves. He could no longer doubt it.

But the smear from one of the black specks was even more interesting. The filaments were present, and there were tiny, round cells among them, cells which also carried the triple dark spots of nuclei. A few of the filaments seemed to be in the act of changing into this new form.

These unusual filaments, he told himself, must be the spores from which the disease spread. Probably at first the spores multiplied directly, so that there was a rapid contagion of infection. But eventually they all lodged near

the base of the brain, and incubated slowly, developing into the large cells he had first observed. Finally, when "ripe," the big cells sent out the filaments, until they reached the nerve endings. The damage was probably done by some obscure, residual by-product of the change from filament to spore.

He knew his enemy now, at least.

"Turn up the magnification, Dan," Chris suggested. "You'll lose resolution, but it may show something."

He reached for the controls and moved them slowly.

Something wet and acrid gushed out, striking against his face. He jerked back, trying to wipe it off. Then his hand moved toward the pistol, but he was too late. Paralysis struck at him before he could complete the motion. He toppled limply to the floor.

Chris Ryan cut off the microscope, and reached behind it. A small spool of wire came out, and she waved it in front of him.

"Judge Wilson neglected to thread his tape recorder, and most of the witnesses were yours," she said. "But now we have your own words to prove you were doing forbidden research. All week I've been setting the trap, but I hardly expected you to walk in with your eyes wide open."

She had prepared an injection, and suddenly she began rolling up his sleeve.

"You and your synthetic diseases," she taunted. "You mix up the little skin disorder with Selznik's migraine, add a few psychotics who would have cracked up anyway, and call it a new disease. Do you think Medical Lobby can't check on such simple deceptions as that? Or didn't you suspect that they'd hear of your open talk of revolt, and realize you were creating some new disease as an excuse for armed rebellion? Maybe these 'runners' of yours are real. You should know, you mass murderer!"

She shoved the needle in, and relentlessly forced the liquid out of the hypo. Nectrosynth—enough to keep him unconscious for twenty-four hours! He started to curse himself, but the drug acted before he could complete the thought.

VIII

FELDMAN WOKE UP to see early sunlight shining through a heavily barred window that looked out on the Space Lobby offices. This time, apparently, they were holding him in the official Southport jail. He waited a few minutes for his head to clear, and then sat up. Fortunately necrosynth left no hangover, although he did have a headache, probably from hunger.

The sound of steps outside was followed by the squeak of a key

in the lock of the solid metal door. "Fifteen minutes, Mr. Norcross," a voice said.

"Thank you, officer." A figure in a neat pin-striped business suit came through the door, carrying a tray of breakfast and a folded Northport Gazette. The face, partly hidden by a neatly-trimmed Van Dyke, seemed about fifty—but the eyes were unmistakably those of Jake Mullens. He compressed his lips, and waited while the heavy door closed.

"I'm supposed to be a friend of Judge Wilson, from Northport," Jake explained quickly. "The judge says it's safe to talk here. They never installed microphones."

He begun unloading bracky weeds from his pockets while Doc attacked the breakfast.

"They tossed the book at you, Doc," he went on. "You haven't got a chance. Mighty little we can do, too. Trial's set for tomorrow at Northport, and it's closed to the public. We can't free you this time."

"It was bound to happen sooner or later," Feldman said. "I've been living on borrowed time for a year, Jake. And just who are "we'?"

"The villagers. We've been organized for years." The older man shrugged. "You might say the revolution has been going on since I was a boy—though a lot of villagers aren't aware of it, even now. We've just been biding our time. Now we've stopped waiting, and the rifles are coming out—rifles we made in our own shops, Doc. Judge Wilson got us the tools and raw materials. The cities are getting scared, and the villages are going to start rebelling—even if we're all certain to die of plague in a month."

Mullens turned to look out through the window, and his voice was oddly blurred. "We picked a war-cry, last night: *Mars for Doc's People!* If anyone lives and wins, you'll probably be the official Martyr of freedom."

Feldman coughed, and reached for the bracky. He knew now that Jake had gone to all the risk and trouble just to tell him that they were sorry—and that they'd miss him. And he knew that Jake couldn't quite say it.

He cut through the silence. "It was a good year, Jake—damned good. But time's running short. You'd better hear the latest on the plague."

Mullens nodded and made some hasty notes on the skin of his forearm. He rolled his sleeve back finally, and stood up, just as steps sounded from the hall. "Anything else?" he asked.

"Just a guess. A lot of Earth germs can't live in Mars-normal bodies. Maybe this one can't live in Earth-normal flesh. . . . Tell 'em so long for me, Jake?"

"So long, Doc." He shook his

hands briefly, and was standing by the door when the guard threw it open.

An hour later, the Lobby police came to take Feldman to the shuttle rocket for Northport. They had some trouble bringing him to the rocket station, because a runner cut down the main street, with the crowds frantically milling out of his way. Terror was reaching the cities—and the authorities were unprepared to cope with it.

He flashed a look at Chris Ryan, riding in front. But her head was erect and facing forward. "Mob-hysteria—like flying saucers and wriggly tops, I suppose?" he said, before the guard could silence him. She pretended not to hear him.

He was riding in style on the rocket this time—though they had locked his legs to the frame of the foam-rubber seat. His hands were free, however. He unfolded the paper Jake Mullens had brought him and buried his face in it. Then he swore. They *were* still explaining the runners as victims of mass hysteria!

Northport was calmer. Apparently the largest colony on Mars still remained untouched by the plague. He studied the streets in detached interest, vaguely puzzled by the complete absence of any real fear in him. No part of what was happening seemed entirely real, even when they locked him into the biggest jail in the city. The whole ritual of the Lobbies seemed like a child's game, after his arduous life among the villages. Yet he had no actual illusions on that score. These children could kill.

Reality came into sharper focus twenty hours later, when they led him into the trial room of the Medical Lobby building. It was a smaller version of his first trial—and fear came quickly to stand by his side, making him want to cry out in protest and dash away wildly, like the runners. The complete lack of common humanity in the proceedings of the Lobby trials seemed like something from a half-remembered and horrible past.

The procedure he had been expecting came almost at once. The presiding officer leaned sternly forward and asked the routine question: "Is the prisoner represented by council?"

Blane, the dapper little attorney who represented the Lobby, arose quickly. "The prisoner is a pariah, Sir Magistrate."

"Very well. The court will accept a protective function over the prisoner. You may proceed."

I'll be judge, I'll be jury, Feldman thought. What was perhap even worse, the Lobby would be both prosecutor and defense attorney. It made for a lot less trouble that way.

Feldman knew, of course, that if Space Lobby had asserted their

interest in the case, it would have had to go to one of the comparatively impartial neutral courts. But as usual, Space Lobby was only too glad to let it remain in the hands of Medical.

The tape was played through first as evidence. Feldman frowned. It had been on wire originally. But as he listened, he could see why they had changed it. It had been heavily edited, and heavy editing would have been harder to achieve on wire. The words were still his—but some parts had been greatly abridged, and others had been cut out entirely.

"We introduced this to prove our charges of treason, murder, plotting against the Combined Lobbies, and research on disease without a permit," the smooth voice of Blane proclaimed.

"I protest," Feldman cried. "That recording has quite obviously been tampered with!"

The Lobby magistrate turned a wooden face toward him. "Does the prisoner have a different version he wishes to introduce?"

"No, but—"

"Then the evidence is accepted. One of the prisoner's six protests will be charged against him!"

Blane smiled triumphantly and placed a small package in evidence. "We present this to show that the prisoner is a confirmed drug addict, incapable of self-control," he said. "Such a man is not fit to be a free member of our society, even under colonial conditions. We wish to establish our contention that the prisoner is completely irresponsible morally, and hence fully capable of any or all of the crimes charged against him. This is a package of so-called bracky weed, a vile and noxious substance used by few, even on Mars. It was found in his possession."

"It contains alkaloids no more harmful than nicotine," Feldman stated sharply. "It's merely a substitute for tobacco."

"Do you contend that you find its taste pleasant?" Blane asked challengingly.

"It's bitter enough to stop most smokers," Feldman said. "But you get to like it."

"I've tasted it," the magistrate cut in. "Evidence accepted. Two deductions against the prisoner's six protests—one for irregularity of presentation."

Doc Feldman shrugged and sat down. He knew that he could not hope to gain anything by protesting, beyond reassuring himself that his attitude toward the Lobbies was based on fact rather than prejudice. Now it seemed to him that his willingness to accept such unjust standards when he was younger must have been accompanied by a terrific amount of prejudice. Mullens had been right. The Lobbies had been in a position of complete supremacy too

long, and were making the mistake of taking off the velvet gloves and flailing their victims with iron fists for the sheer pleasure of showing their power.

Next, Chris Ryan told her side of the story. She told it truthfully enough, as far as the broad outlines went. In fact, if she had been completely sure of his guilt in advance, her version would have been no more than a logical explanation for the behavior of a monster. He wondered at her courage in facing such a monster.

The testimony dragged on incessantly. Finally, the magistrate turned to Feldman. "Pariah Daniel Feldman," he said. "You will now present your defense. You have one hour."

"I ask complete freedom of speech," Feldman said.

The magistrate nodded coldly. "Since this is a closed court, your request is granted. The prisoner will *now* have ten minutes to present his case during which no interruption will be permitted. The recording tape will be scrambled."

The scrambling of the tape was a new wrinkle, and Feldman frowned. It ruined his chances of ever getting through to a wider audience. But it was too late now for him to change his mind and he could only hope that a few of the Medical men present would remember his exact words.

"I have nothing to say in my own defense, because it would be useless," he began, trying to keep the bitterness and the fury out of his voice. "I do have something to say for all the people on this planet, and many on Earth, as well. There's a plague raging outside—the greatest threat we've ever faced. I know a great deal about that plague. I've studied it intimately. I've learned some things which the Lobby has refused to even attempt to learn. I ask only that you listen with an open mind . . ."

He sat down after three minutes, knowing that his plea had fallen on deaf ears.

Blane arose, with the smile still on his face. "I intend to be quite brief. We charge that the 'plague' which the prisoner mentions is a threat designed to frighten us—a threat which he himself discovered and disseminated. Horrible as it may seem to honorable minds, there have been many other cases of fanatics willing to destroy the world to eliminate a few men and women inimical to them. Now, surely, the prisoner himself had made his attitude unmistakably clear. He has repeatedly indicated that he possesses more specialized knowledge than the entire staff of Medical Research. He has further stressed the danger of this so-called plague—a threat unquestionably meant to intimidate us. . . . The prosecution rests."

The magistrate turned to Doc, and shook his head.

The guards took Feldman into an anteroom off the courtroom, where he was supposed to be held incommunicado. But the guards' curiosity as to his probable punishment was stronger than their discretion. They allowed the door to remain a trifle ajar.

The magistrate himself opened the discussion. "The case seems firm enough, Mr. Blane. I suppose we'd better publicize it, since so many of the people are getting out of hand. If we let them know that Feldman is responsible for the hysterical manifestations and that Medical is eliminating the source of the original minor infection, it might have a stabilizing effect. Do you have a proposed release?"

"Two of them, subject to your choice. But I think the more emotional one is best now. And the more publicity, the better. Of course, I haven't filled in the sentence yet."

"Naturally. It will have to be death. We can't let such a rebellious monster live. Still . . ."

"I am thinking of the case of Albrecht Delier," Blane suggested. "We can't permit Feldman to receive a sentence less harsh, surely."

It struck Feldman then that the men actually believed in what they were doing—as the medieval witch-burners must have believed in their own self-righteousness. He wiped the sweat from his forehead and stood up—just as the buzzer sounded.

The guards led him before the bench again, and silently stepped back.

The magistrate rolled a pen slowly across his fingers as he stared coldly down at the prisoner. "Pariah Daniel Feldman, you have been found guilty on all counts," he said. "Furthermore, since you were an accepted member of that section of the Martian community known as The Villages, your guilt, to a greater or lesser extent, falls on many. This court recognizes that it would be unfair to pass sentence upon you without also sentencing the men and women associated with you in your crimes. Therefore, as evidence of our justice, the entire section known as The Villages will be placed under ban and forbidden all services of the Medical Lobby, its staff, or its members, for a period of three years . . ."

"Sir Magistrate!" One of the few members of the Northport Hospital staff was on his feet. "Sir Magistrate! I'd like to protest. We can't—"

"We can, Dr. Harkness. It's a harsh decision—I realize that. I'm sure all of us hold to your humanitarian sentiments." The magistrate rolled the pen more slowly, smiling at the protesting physician.

"Unfortunately we have no choice in the matter. It is obvious

that so long as the bunglings of such men as Feldman and the herb doctors can be rectified by an appeal to Medical, we'll never be able to really help the Villages. It's encouraging to see that most of you younger doctors disagree with me. It shows that the fine tradition of Medicine goes on unimpaired, that the Medical Lobby puts life and humanity above all else. But there are times when the good of the greater number requires some sacrifice by the few. That's why your Lobby has rules. Why not see me after court, Dr. Harkness? We'll talk it over."

He turned to Feldman, and his face became severe again.

"Daniel Feldman, this court hereby sentences you to be taken into space, beyond the legal planetary limits, together with all the instruments which were used by you in the furtherance of your criminal acts. There you will be placed in a space suit containing sufficient oxygen for one hour of life, and no more. You will be released into space, to drift beyond touch of all other matter from that moment until eternity. It is the court's wish that this sentence be executed within forty-eight hours. And may God have mercy on your soul!"

IX

FORTY EIGHT HOURS is a meaningless term to a man under sentence of death. In Feldman's case, each minute seemed to drag on endlessly, but the hours passed so quickly that they seemed swallowed up in the paradox of subjective time.

It wasn't entirely that he was afraid to die. There were periods when fear did clog his throat and leave him gasping with the effort needed to keep from beating against the walls of the prison with his bare fists. But there were other times when he experienced no fear at all, when his mind devoted itself entirely to frantic efforts to find a solution to the problem of the plague. Most of the time, though, he was successful in keeping fear at bay, and managing a fair semblance of normal emotional balance.

He'd seen the papers, and he knew that posters were going up even in the proscribed villages, posters depicting him as a monster beside whom Jack the Ripper and Albrecht Dalier were kindly-disposed amateurs.

They were trying to take all the fears and all the resentments of the people and focus them on him. They were appealing to mob violence and they were doing a good job of it. Under his window, a crowd had begun to collect soon after his return. Now it stretched across the entire street, as far as his eyes could see.

He hadn't thought that the guards would come for him until

take-off time, but they arrived at his cell much earlier than that—less than seventeen hours after his return. They led him up to the roof of the three-story building, moving in haste, obviously alarmed by the threatening behavior of the crowd.

One of the South-North shuttles was balanced precariously on the roof, with its ladder down, its entry port open. Landing must have been a difficult maneuver, but the guards left him no time to admire the feat. They hustled him inside, manacled him, and strapped him into an acceleration sack. One of them exchanged papers with the pilot.

"Get him out fast," the man warned. "If that lynch mob ever gets into the jail, they'll pull your rocket apart."

"Might as well let them," the pilot complained bitterly. "The only thing that'll get me to the orbital station in this local rig is faith. I'm so loaded with fuel I can hardly lift—"

"That's your problem," the guard answered. "And so is he!" They left quickly, without wishing the pilot success.

The little shuttle lifted sluggishly, but there was no great difficulty, in spite of the pilot's pessimism. Doc could see that some of the fuel remained in the storage tanks when they slipped into the tube at the orbital station.

The station wanted nothing to do with him. He was subjected to a merciless scrutiny and fifteen minutes later, found himself locked into one of the cabins of the *Iroquois,* with all his personal equipment hastily thrown in beside him.

Here was an ironic turnabout. When he'd been working like a machine to serve the needs of the *Navaho* honestly he'd been put in the worst section of the ship and left "free"—at the mercy of space-stomach. Now, as a criminal sent into space to die he was installed in a comfortable cabin, where constant spin gave enough feeling of weight to satisfy the greenest tenderfoot. And the *Iroquois* was the finest and newest ship Space Lobby owned.

He roamed about the cabin, studying it idly, until he found the little collapsible table with its magnetic surface to hold down cutlery and plates during rough acceleration. He pulled it out and began setting up Judge Wilson's microscope and equipment.

For a moment, Feldman smiled as he thought of Judge Wilson. That microscope had probably been shipped out fresh from Earth, meant for his use, and the Judge had simply given it to him in the easiest way. He'd worried afterwards about the fact that he should have returned it. But he was sure now that Wilson had been highly amused at his own cock-and-bull story of how he had come into

possession of it. But who would have suspected the Space Lobby president's brother of being one of the secret rebel outlaws?

The buttons over the table caught and held his attention. He pushed one marked *Steward*, and waited. The reply was surly, but prompt enough. "Yes?"

"How's the chance of getting a meal—a good one?"

"You're on a first-class ticket. I've got to give you what you want."

They could afford it, he decided. He wouldn't consume much food, considering the distance he was going with them.

"Then bring me two first-class meals," he said. "One Earth-normal food, one Mars-normal."

"Okay—but you can't suicide on it," the Steward said grimly. "You may get sick, but you won't get out of it that easy, no matter how much you mix 'em." The intercom clicked off, and then back on. "And don't worry about poison, Feldman. I'm going to enjoy seeing you dumped too much. I—"

A sharper click interrupted him. "That's enough, Steward. . . Captain Everts speaking. Mr. Feldman, you have my apologies. Regardless of future orders, you're my passenger until you reach your destination. As such, you're entitled to every consideration except freedom of movement through the ship. I am always available for legitimate complaints."

Feldman shook his head. He'd read about that sort of man. It was the type who'd first taken over the old Lobbies and made them into governing bodies. The Lobbies liked to think their presidents still possessed such integrity and basic human kindness, but Feldman knew better. In fact, he'd thought the species extinct.

The steward brought in his food in a thoroughly chastened mood, but the man's eyes were dark with hate. He set the tray down on the table, taking care not to move the microscope, and came to attention. "Is that all, sir?" he asked, with careful correctness.

Feldman nodded, and he went out quickly, closing the door behind him.

For a moment, as the smell of the steak tantalized his nostrils, Doc regretted the fact that he'd taken the enzymes to switch his metabolism to Mars-normal. Then he shrugged. A little Earth-normal food couldn't hurt him now. He squeezed some of the broth into a spoon and transferred it to one of his bottles. Then he fell to eating. But after the first few bites, he found the food queerly unsatisfactory. In fact, the seemingly unappealing Mars-normal ragout suited his current tastes far better.

The steward returned to clear the room, scowling at the wasted steak. Doc let him go, and began

transferring drops of his cultures to the bottles he had filled from the various foods. He labeled them carefully and wrote his accounts down in a tiny script as he went along. He'd decided to leave the small note book behind—on the chance that some person of reasonable intelligence might be able to make something of it. It was not a possibility he could take very seriously—but the fiction helped him to pass the time.

A gong sounded, and a red panel warned him that acceleration was approaching. He finished with his bottles, hastily fastening them down near the little heater. Then he stretched himself out in the padded bunk, and swallowed a tablet of morphetal.

When he awoke acceleration had ended, and the buzzer over one of the buttons on the wall was flashing insistently. He saw that a simple breakfast was already laid out in thermo-dishes, and stopped for a quick swallow from the coffee container before answering.

"Captain Everts speaking," the little speaker announced. "My compliments, and may I join you in your cabin?" The words were precise, as before. But now there was a note of worry under them.

"Come ahead," Feldman told him. He cut off the switch, and glanced at the clock on the wall. He had less than eleven hours left.

Everts was a sturdily built, dignified-looking man of about forty, erect and yet not rigid. There was not the faintest trace of friendliness in his glance, but his courtesy was in no way influenced by the contempt he must have felt for a man who had, in his eyes, betrayed a trust. "I've already eaten," he said quitely, "but don't let me stop you."

He accepted a chair opposite Feldman and met his gaze directly. But his voice was almost apologetic when he began. "This, sir, is a personal matter, and one which I perhaps have no right to ask you to discuss at all. But my wife is worried about the plague. I violate no confidence when I tell you that there is considerable uneasiness on Earth—if I am to believe the messages I have received. The ship's physician fears that she may have contracted it, but he isn't sure of the symptoms. I understand from him that you have studied it—"

He left it hanging, while Doc wondered about that physician. Apparently here was another man on board who was more concerned about the welfare of his patients than about the Lobby's rigid restrictions, though he probably was meticulously careful about obeying all of the actual rules.

"When did she have Selznik's migraine?" Feldman said.

"About thirteen years ago," Everts said. "We went through it

together, shortly after having our metabolism switched. That was during the food-shortage of eighty-eight, of course."

Doc stood up and felt carefully at the base of the Captain's skull. The swelling was there—tiny, but unmistakable. He asked a few more questions, but there could be no doubt.

"Both of you must have it, Captain—though it won't show up for another year at least. I'm sorry."

"There's no cure for it, then?" Everts asked.

Feldman studied the man carefully. With some men, fear alone might have enabled a shrewd physician to dicker for almost anything—perhaps even for a reprieve. But Everts wasn't that kind of man.

He shook his head. "I know of no positive treatment, Captain—though I may have stumbled on a clue. Perhaps, if I could leave a few notes behind for your physician—"

It was Everts' turn to echo Feldman's former words. "I'm sorry, sir. I have orders to burn out your cabin when you leave."

He held out his hand with a faint bow, and left as quietly and erectly as he had entered.

Feldman tore up his notes slowly. They were taking no chances, apparently. Whether they still believed he was guilty of actually starting the plague, or only felt that any last words from him would ruin his usefulness as a scapegoat, it was no coincidence that he'd been shipped with a man of Everts' character.

He paced the cabin slowly, and in tight-lipped silence, while his eyes lingered on the small culture phials. Twice a brief attack of nerves sent him to his bunk, to lie with his face to the bulkhead, his mind tumultuously racing. The chronometer had advanced almost ten hours when he finally began opening the little bottles and slipping the tiny drops into the microscope's field.

He was only half through when he heard the heavy steps of space-suit boots echoing down the corridor outside. But the results had been positive enough. He threw open the switch, and pressed the Captain's buzzer. He heard a click, and the light showed green, just as the door began to open.

"Everts, I've found the cure. Go back to Earth-normal!"

There was no answer, and he saw that the light had blinked off. He had no way of knowing whether his message had even been heard. Quite possibly—it seemed more than probable—duty to some unknown order had forced Everts to cut him off too soon.

Three officers had come into the room. The first to enter was dressed in a bulky space-suit, and he held out another suit to Feldman, motioning for him to put it

on. The other two began gathering up everything in the cabin and stowing it neatly into a sack designed to protect freight for a limited time in a vacuum.

Feldman forced his hands to steadiness with the obstinate pride he had observed in other men who were dying or in great pain. He began climbing into the suit. He reached for the helmet, but the space-suited officer took it from him and pointed to the gauge on the oxygen tank. He would have exactly one hour's supply of the precious gas when they threw him out—and the dead line was now less than five minutes away.

They walked with him down the corridor outside, to meet Everts coming toward them. The Captain's expression told him nothing. There were still three minutes left when they reached the airlock, with its inner door standing ajar. The space-suited officer climbed in with him and began strapping his body to the interior handholds, to keep the rush of air from sweeping him out when the outer lock was released.

Feldman had saved out one bracky weed from his meagre store. Now he raised it to his lips. Everts held out a lighter, and he inhaled deeply. He needed the smoke to keep panic at bay. It was a different kind of fear he was experiencing this time. Before, he'd always kept a part of his mind detached, had refused to believe in an absolute sense that it could happen to him. Now he knew that there was no longer any hope, that his body would be spun into space and that he would die in agony with all hope cut off, would have a whole hour to realize the horror of it.

Everts nodded faintly to the man holding his helmet. Feldman dropped his bracky weed reluctantly. He could feel the helmet being snapped down. A hiss of oxygen reached him, and the suit ballooned out. There was no gravity here, and the two officers handed him up easily to the space-suited figure in the airlock. Slowly the inner seal began to close.

He still had ten or fifteen seconds, according to the big chronometer which had been installed in the lock. He reached down and pulled the package containing his worldly goods up toward him, gripping it firmly with his left hand. There was no purpose to his action, except that it gave him something to do. But the spaceman reached out and tied the sack's neck-thongs together around the wrist of Feldman's suit.

A red light went on, and the chronometer registered five seconds. The space-suited officer caught him up by his waist, and held him back against the inner seals. The red light blinked. Four seconds . . . three . . . two . . .

There was a sudden heavy thud-

ding sound, and the *Iroquois* seemed to jerk sideways slightly. The space-suited officer's face jerked sharply around, and surprise was heavy on it.

The red light blinked again and stayed on. *Zero!*

The outer seal snapped open, and the spaceman heaved at the same split second that the air current tossed Feldman forward. He saw the edges of the lock slide past him, had a brief, terrifying glimpse of the metal of the outer hull, and then was alone in space, gliding away from the ship, with oxygen hissing softly through the valve, remorselessly ticking away his life.

X

FELDMAN FELT unconsciousness departing, struggled desperately to remain alert and in full possession of his faculties. He couldn't black out now. Time was too precious. He forced himself to think, to think . . . He shoved the sickness deep down inside himself—into a corner of his brain which he determinedly made smaller and smaller until it was gone.

It was sheer stupidity, of course. Nothing could have been more merciful than mental oblivion—swift, absolute. But the will to live—even for an hour—was stronger than his logic.

It was almost as if a switch had been thrown with abrupt, incredible violence deep in his mind. One second he was chasing sickness further and further down. The next, he was in one of those moods where his personal fate seemed of no great importance, where his only regret was that he would never know now whether humanity had survived the plague.

He was spinning slowly, now, so that the stars directly in front of his eyes seemed almost to crawl across his vision. A warning sounded in his brain. He'd have to be careful to close his eyes when his erratic spin brought him directly opposite the sun. A man could be blinded if he looked at the naked face of the sun in space for any length of time.

He'd been a fool once too often. He had considered Chris Ryan stubborn instead of fanatic—an error in judgement which had cost him his life.

Something blinked to one side, and he turned his head to stare at whatever it was.

The ship was less than three hundred yards away, and he recognized the blinking object as one of the six life-rafts which the *Iroquois* carried—he'd seen one almost exactly like it on the *Navaho*. Now his spin had brought him around to face it, and he saw that it was paralleling his course, losing only a few feet a second. The ejection of the life-raft must have caused the thump and dis-

turbance he'd heard just before being cast adrift.

It meant that someone was trying to save him! It meant *life!*

He flailed his arms and beat his legs together, trying to signal. Most of his friends couldn't have paid passage on the *Iroquois*. The villagers had nearly stopped trading with the cities, and had no money. Judge Wilson was too old to be permitted off the surface. Could it be the Captain's wife—mortally terrified that his death would remove the one man capable of saving her.

Something flashed a hot blue, and the little craft leaped forward. He realized at once that whoever was handling it knew nothing about space navigation. It had picked up too much speed, and hadn't been turned properly.

Again the blue spurts came, but this time the outcome was even worse. There was a longer wait, and then a third try was made. It wasn't good. But it was obvious that it was the best the "pilot" could hope to achieve, with his limited knowledge. Feldman estimated that the craft would miss him by a good hundred feet. It drifted slowly nearer, but to one side. It would soon pass him and when it did he knew that his last chance would be gone.

A space-suited figure suddenly appeared in the tiny airlock, holding a coil of rope. The arms moved suddenly, but it was only a practice try. They were still too far apart.

Ten seconds later, the rope sailed out again. The aim was good—but the rope was too short. Although it would pass within ten feet of him the life-raft might as well have been ten miles away.

Every story and film on spaceship navigation he had ever seen seemed a mad chaos in his mind. He seized on one idea. He inhaled deeply, and yanked the oxygen bottle free. The valve clicked shut, sealing the suit, and an automatic seal on the bottle cut off its jet. He aimed it, his lips tight as he fumbled for the manual control.

If he'd been standing on ice, it might have worked. But here he was free to move in three dimensions. The muscular effort kicked him toward the rope only slightly. Most of the energy was wasted in setting him into a wild spin. He blinked, trying to see whether with a second try he could hope to reach the rope, and how much time remained to him. It was within five feet now.

Again he waited, until he seemed to be in position. This time he threw the bottle away from him. It added a spin around his vertical axis to the other—but almost instantly the rope came into view within arms' reach.

His fingers closed over it just as his lungs seemed about to burst, and his head started reeling. He

couldn't hold on long enough to tie it . . .

His lungs gave up suddenly, collapsing and sucking in air greedily. The inrushing air cleared his head. He'd forgotten that the inflated suit held enough oxygen to keep a man alive for several minutes in an emergency.

His body struck the edge of the airlock, and a hand jerked him inside. The outer seal shut with a clang and there was a sudden easing of pressure, followed by the hiss of air in the lock. He threw back his helmet, and stared at the slender figure facing him in stunned disbelief.

Chris Ryan was deathly pale, close to collapse. "Thank God, Dan," she whispered. "I—I almost gave up." She had whipped her helmet completely off, and loosened the collar of her suit.

"I like the air out there better," he told her bitterly. "If you'll open the lock again, I'll leave quietly. I'm quite sure you didn't rescue me out of compassion or remorse. I don't know why you came along and, frankly, I'm not too interested."

"I came as official Lobby observer, to make sure the sentence was properly carried out. You might at least show some gratitude. Saving your life wasn't in my orders!"

He grunted, and reached for the valve that would release the outer lock. "I don't feel grateful. Better get back inside if you don't want to go along!"

"It's up to you, Dan," she told him, her voice suddenly calm. "I'm on your side now."

He held his fingers. "Let's see. The spare battery, the wallet I didn't find, the delay—"

"It was all true enough. Every word of it was true—up to the point where I said I thought the Lobby had made a mistake. Dan, please, get inside this liferaft! If you don't care about me, you might care about some of the people who are dying because you won't save them!"

"All right," he said grudgingly, while he fished inside his suit for a bracky weed. "Suppose you tell me about it."

She held out a flimsy copy of a space radargram. It was addressed to Mrs. D. E. Everts, and was signed by one of the more competent practicing doctors on the Lobby Board of Directors.

"Regret to confirm diagnosis. Top secret. Repeat—Top secret. Martian fever incubates fourteen years. It is now believed to be highly fatal. No cure, research beginning immediately. Violation of secrecy ruling will be regarded as a treasonable act, punishable by death."

"Mrs. Everts would have to be somebody to rate a message as damaging to the Lobby as that," Doc commented dryly.

"She's the only daughter of

Dwight Elmers of Finance," Chris told him.

She pointed to the message, underlining a few words with her finger. *"Fourteen years.* You couldn't have caused it, if it takes that long. *Highly fatal.* And they're letting people die and go crazy when they know that. *Research beginning.* You've already found the cause, working alone. It is all very clear to me now, though I couldn't believe it before. That's why I took the life-raft. I told them I was acting under orders. Dan, when Mrs. Everts came to see me it was too late to do anything else."

She paused, then said quietly. "I have the plague, too, Dan. Father has it. He used to act as a medical officer between Mars and Earth. Dan, are we going to die?"

Feldman had shucked off his space suit and moved forward to the control panel. He stood for a moment staring at the dials, his lips tight as he studied the manual control unit, which must have been what Chris had used in her crude attempts to guide the raft. He wondered if it would work out here where there was plenty of room and nothing to hit.

"Dan!" she repeated.

He shrugged. "I don't know. Your father probably will die. They've gotten started too late to save a lot of people. They'll probably be under so much pressure that none of their few real brains can function at peak efficiency. And this top-secret ruling looks bad. I tried to tip off Captain Everts to a possible cure. But now he'll probably keep it to himself. Certainly your precious Lobby won't listen to me."

She stared at him, her eyes suddenly wide, and startled-looking. "A cure, Dan? You mean you've actually found—"

"Maybe. But now you'd better get some rest. Feeling concerned about you doesn't make any kind of sense but I guess I—hey, what's up?"

She had stumbled, and he had to catch her. He half-carried her to a bunk and laid her on the pad. She was moaning, and clutching at her head. "It's another attack. And I don't have any more Nograinodyne," she cried.

He grimaced, and began fishing in the sack that had been attached to his space-suit. Chris had always been a good technician, but he'd never had much respect for her skill as a practicing doctor.

"Try keeping your mouth closed for a while," he told her. "And swallow one of these anodyne tablets. You'll feel better in a couple of minutes."

She moaned again. He put the pellet between her teeth and her throat contracted painfully as she tried to swallow it with water. The tablets were too powerful for general use. But there was no other effective palliative for Selznick's

migraine. A few minutes later, Chris relaxed, though she was still sniffling.

"You don't like me, do you, Dan? Not even a little bit. You hate me! I guess I deserve it . . ."

"I don't hate anyone now," he said. "I'm too knocked out. Tomorrow, maybe, but not today. And I know damned well you don't love me. I suggest you stop feeling sorry for yourself. I'll try to cure you, but right now, I've got to figure out some way to bring this raft down on Mars without cracking it up."

He left her and began searching the ship, taking stock of their provisions. There should be fuel enough, he told himself—if he used an economical orbit. He checked off other items one by one. Food, water, oxygen. Then he returned to the bunk section to ask Chris a serious question.

"Did you pick up aspirators and batteries?"

She looked surprised, and he knew she hadn't even thought of that. He'd been hoping they could land in the wastelands, a good day's march from the village. In such a region a life-raft would have a very good chance of landing unobserved. Everts had unquestionably seen Chris pick him up, and Mars must know by now that he had been rescued.

The Lobby would be more than happy to take him into custody again, though they might find it impossible to get him alive, judging by the lynch mob he had seen assembling outside the jail.

Of course, the Lobby knew by now that he'd had nothing to do with starting the plague. But he couldn't see them printing posters and running headlines to proclaim his innocence to the enraged people.

"Is there any chance the Lobby might want to pick me up to find out more about the plague?" he asked.

Chris shook her head. "They've got more than enough evidence to know you were preaching rebellion, Dan. They know you were one of the ring-leaders—if not the only real leader."

He grinned bitterly at that. He didn't even know who the leaders were. But if the Lobby thought otherwise, he couldn't put down at Southport and bargain for protection on any terms. No matter how many plagues he might be able to cure, Space Lobby wouldn't permit a rebel leader to live.

He'd have to put down near a village, and stay in his space-suit until he could find a house and get aspirators.

He couldn't hope to escape taking risks. For all he knew, even Jake's village might be ready to tear him to shreds. It was hard to say what the combination of plague and propaganda might have accomplished by now.

He found an envelope of mor-

phetal near the cot, and handed Chris one of the pills. "You'd better go to sleep. It's going to be rough here until I know more about how to operate this craft."

She took the pill obediently enough, while he stood studying her, wondering where she really stood now. If a fanatic *could* be made to change sides . . .

He jockeyed the ship around by trial and error, studying the manual with every move. According to the little booklet, landing was simple. The ship was "self-levelling" in an atmosphere, and the automatic "flare computers" made it possible for even an amateur to judge the rate of descent near the surface. It didn't say anything about a complete novice, though.

He gave up thinking of what he'd do after the landing. Life would have to be played by ear, according to what he found—and depending on how well he made the set-down on Mars. He smoothed out the orbit every hour, until he estimated they were at turnover point. Then another hour passed while he cranked the little gyroscope to swing the ship around. It saved fuel he might need later.

He was gaining some proficiency as he handled the controls, he felt. But now he'd have to waste some of the fuel he had saved and ruin his orbit again. There was no way to practice operating a spaceship without actually operating it, and that took more fuel than he liked to think about.

In the end, he compromised, leaving some margin for a bad landing that might require a second attempt. He felt far less certain of himself than he had hoped to feel.

He had located Mullens' village through the ship's telescope when he finally reached for the levers that released the main blast. An hour later they were in the outer fringes of the sky, and the blast was beginning to show a yellow corona that ruined visibility.

He turned to the flare-computer, and back to what he could see through the quartz viewport. He was going to land about half a mile from the village, as near as he could judge.

The computer seemed to work as it should. The speed was within acceptable limits. He gave up trying to see the ground, and prayed that it was safe to trust machinery designed for amateurs. The flare blossomed, and he yanked down on the little lever.

It could have been worse. They hit the ground, bounced twice, and turned over. The ship was a mess when Feldman freed himself from the elastic straps which had saved him.

Chris had cried out once, and for a moment as he crawled up toward the bunk he was scared that she had been badly hurt.

Then he saw that she was on her feet and relaxed.

She said reassuringly, "I'm all right. But it's a cruel way to wake a sleeper, Dan Feldman."

He threw her one of the spacesuits and an emergency bottle of oxygen from the rack. "Then get into that," he said. "We've sprung a leak, and the pressure's dropping."

They were half-way to the village when a dozen tractors came racing up, and Jake Mullens piled out of the nearest one to drag the two in with him.

"Heard about it from the *Iroquois'* broadcast and figured you might land around here," he called out. "Good to see you, Doc."

He started the tractor off at full speed, back toward the wastelands, while Feldman stared at the tractors filled with men armed with rifles.

Mullens nodded. "You're in enemy territory, Doc. There's a war going on!"

XI

CHRIS RYAN WAS asleep on one of the bunks in the make-shift laboratory, and Feldman was just dropping onto the other when the little radio-alarm shrilled. He sighed and shook her awake.

"Again?" she protested.

She stood up reluctantly, and then began hastily helping him pack their equipment. They'd been forced to move four times in a week, but the Lobby forces had already started to invade the entire sector, and they had to go on to a safer place.

Mullens came in, his own eyes heavy with sleep, pulling on the old jacket with the big star on its sleeve. Feldman had been surprised to learn that Mullens was the actual leader of all the rebels.

"Some fool must have babbled," he explained. "We just got a runner from Wilson. The Lobby is all set to send a couple of shuttles down here to wipe you out. Tractors are waiting. Here, Chris, give me the electron mike."

Two minutes later, and barely in time, they were moving off in the tractors. The shuttle rockets came zooming down and stood on their tails, just off the ground, letting the full force of their blasts bake the area where the laboratory had stood.

"We're going all the way back to the wastelands," Mullens said. "Figured you'd be better off near Headquarters, in case something came up. But from now on, you get isolated, with only five of us knowing where you are. You can't work this way. Know anything about a Dr. Harkness?"

"Not much," Feldman answered. "He seemed to have some decency. Why?"

"He and five other doctors were picked up, trying to get through

to me. They claimed they were sick of the Lobby and wanted to join up. We can use them, God knows."

Chris Ryan had gone back to sleep, propped up against the smooth back of the microscope. She'd been killing herself since they'd landed, and Doc let her sleep. It would be a long time before he could trust her completely, but he'd decided that something had made her change sides—probably the knowledge that she was herself infected plus the realization from the radargram that the Lobby was willing to let her remain in ignorance, while revealing the grim, starkly tragic facts to the favored few.

Mullens swung the car down one of the long stretches of level sand, his face haggard with strain. "It's your war, Doc. When they tried to kill you for making an honest attempt to save us, we had to fight, ready or not. Right now, the Lobby's fighting mostly to get their hands on you, before you find out too much. And, when you find the cure, you're going to win it for us. It's a lost cause if you don't. Give us a cure for *our* men, and we can force the Lobby to surrender. Otherwise we won't stand a chance."

Feldman started to protest, but it wasn't a new idea to him. Things like that happened in war. He wanted to see everybody cured, and was working desperately toward that end. But Jake's idea was the popular one.

It was a crazy war, with each side killing more of its own men than those of the enemy. The runners were increasing, and Mullens' army was learning to shoot the poor devils mercifully and go on. They knew, at least, that there was no danger of infection. Curiously, in the Lobby towns, an even larger number of men were dying as fear and panic began to add to the victims.

The sides were cleanly split by now. Desert towns had joined the villages, reluctantly but inevitably, to give the rebels nearly three-fourths of the total population of Mars. On the other hand, the Lobby forces and the few cities held most of the real fighting equipment, and they could afford to wait for Earth to send out help, or for unmanned rockets loaded with atomics to cut through space at ten times normal speed.

There were vague lines of battle, but Mullens was right. Doc Feldman knew that the chief issue for the Lobby consisted of getting him back, and most of their sorties had that end in view. The villagers raided the Lobby lines for more time, mostly, until Doc could succeed.

But it looked as if the rebels were doomed to disappointment. He and Chris had put in every spare minute between moving and the snatching of a bare minimum

of desperately needed sleep in searching for something that would check the disease. It couldn't grow in an Earth-normal body, but it didn't die either. They couldn't simply switch over for a while and then switch back.

To add to the difficulty, the change-over to the old Earth-normal foods was a treatment far better suited for Earth than for Mars. On Mars all foods had to be synthetic, and that practically meant Mars-normal. Methods of synthesizing Earth-normal foods had been tried out at various times, and a few had worked. But they were all discouragingly complicated by comparison with the older Mars-normal synthesis, and the best of them were less than five percent efficient. Mars could never live for long on such food, though a few hardy men and women might be saved.

Even on Earth, the population was too large for the widespread utilization of natural foods, and there weren't enough experienced farmers to grow such foods in abundance.

One of the outlying villages was busy repairing the largest of the old experimental plants for producing Earth-normal synthetics. The food would be used for the most valuable men—if a test run proved the plan feasible. Another village was producing enzymes to enable the body to use either type of food until the new diet could completely replace the old physiological isomers with the vitally important newer ones.

"No progress?" Mullens asked for the hundredth time.

Feldman shook his head. "We've found a fine accelerator for the bug. We can probably get it to go through its whole incuba-

tion period in a few weeks—or make someone who's already infected catch it all over again. But we can't slow it down, much less kill it off."

Mullens grinned, and for a moment he seemed his old self. "Well, now, Doc, that's mighty helpful news. Now if you'll just rustle up some way of getting the enemy to drink that accelerator, we might win the war after all."

The new laboratory was still being fitted up as they entered it. It had been dug into one of the few real cliffs in the vicinity—a low stone ridge perhaps twenty feet high. A power plant had been installed, complete with a steam plant that operated off sunlight through a series of heat-valves that took warm air and produced a condensation hot enough to boil water.

"I'll be up to see you once a day," Jake promised. "Or if I can't come I'll send someone who knows about this. You'll have the warning radio, of course. But mostly, we're going to avoid this vicinity, so the Lobby can't locate you. Maybe they'll think for a while they got you with the shuttles—though I can't let the men believe that. They've had a mite too much trouble already. Anything else you want?"

He stared hard at Doc.

"Guinea pigs, rabbits, mice," Feldman told him sarcastically. It was a standard ritual now, and Mullens nodded, heading back to his tractor.

Doc opened the cots, not bothering to unpack the equipment, or worry about the two men who were still working on the place. "Better turn in, Chris," he told her. "I've never seen you looking quite so tired.

She stared at him doubtfully. "You almost sound concerned about me, Dan. You're slipping. One of these days you'll be liking me again."

"Maybe." He was too tired himself to argue. "Go to sleep Chris."

Chris made breakfast in the morning and had it waiting for him when he awoke. She began discussing a way to keep one of the organic antibiotics from splitting up into simpler compounds when they tried to switch the single atom of phosphorus from one side of the molecule to the other.

Mullens came late, just after sundown. He was lugging a heavy box with him. He dropped it on the floor, and the creases deepened in his face.

"Mice!" he said.

Doc ripped off the wooden cover, exposing a twelve-inch surface of fine screening. There were white and gray mice in the box—at least two dozen of them!

"Doc Harkness heard you needed mice. It seems that the hormone extraction plant north of

Southport had a shipment sent out from Earth for testing some new product. The raid cost us seven men, but it paid off. At least Harkness claims it was worth it. He's a good fighter to have along on a raid."

One of Mullens' hands was in a bandage, but he waved aside Doc's attempt to examine it. "Just a bullet through the soft part of the palm," he said. "Be all right in a couple of weeks. Here!"

He'd gone to the doorway and returned with another crate, this time crammed with bottles and boxes of all sizes. "Harkness picked them out himself," he explained. "Stuff they were producing and stuff they were experimenting on. He figures some of it may prove interesting."

Chris and Doc were already going through the two largest boxes. The labels were engineering ones, giving the chemical formula in shorthand for the basic ingredients.

"If anything proves useful, it might be possible to make it up in some of the village extraction plants," Jake told them.

"Anything else?" Doc asked, when the new supplies had been arranged with the old.

"More runners every day," Jake told him. "A lot more. We're still holding things down, but it's reaching the limit. If it keeps on panic will start in our camps, knowledge or no knowledge. That's my worry, though. You stick to yours."

Several of the new chemicals showed promise. In the tubes, they definitely reduced the number of plague germs. But two of them proved fatal to the mice, and the others were completely harmless—both to the mice, and to the germs. Apparently the plague cells were much hardier when in contact with an animal body, away from the air, than they were in the artificial environment of the culture jars.

It was Chris who made the most interesting discovery. "Every one of the successful chemicals has had chlorine in it," she pointed out. "The best ones have had at least *two* sulfate radicals." She indicated a row of bottles, carefully set aside for further experimentation. "So do these, and we haven't tried them yet."

They wasted two solid days exploring the new development, using the accelerator to speed up the infection in some, leaving it out in others. The results proved to be no better than the results of their previous work. The presence of chlorine in the successful chemicals had apparently been pure coincidence.

To make matters worse, it had cost them the lives of seven mice. It would have been a serious cause for concern, except that

most of the females were already living up to the reputation which mice enjoyed of being able to take care of any decrease in the population under ordinary circumstances. Doc was unfamiliar with the exact gestation period, but he was quite sure that it was a short one.

"Funny they all chose the same time to breed," he commented. "They must have been shipped out separately, or else they would have stopped breeding while they were being switched over to Mars-normal. Something interrupted their habits, apparently."

He found out what it was during the night. There was a horrible squealing from the mice box that brought him upright before he quite realized what was happening. Chris was already fumbling with the light switch when he crossed the room to her side.

All of the mice in the box were charging about in the limited space, their legs pumping furiously, their mouths agape. What they lacked in size they made up for in numbers, and the din was terrific.

But it didn't last. One by one, the agitated little animals began dropping to the floor of the cage. In a quarter of an hour, the last mouse was dead!

There was only one explanation that made complete sense. Sometime after reaching Mars, they must have contracted the plague. Women were normally sterile for a considerable period after Selznick's migraine struck them, and the mice had apparently been similarly affected. But in the mice the incubation period had been shortened incredibly. The disease was nothing if not adaptive.

Chris prepared a slide in dull silence, and together they bent over the microscope. A single glance sufficed. It was the same germ! Feldman picked up one of the little creatures and cut it open carefully, removing one of the foetuses.

"Try a film from that," he suggested.

Chris worked rapidly, scraping out the almost microscopic brain, dissolving out the fatty substance, and transferring the result to one of the films. This time, even at full magnification, there was no sign of the filaments that should have been present.

They both studied it. Then, to make sure, they dissected another mouse, and still another. The results were the same.

"Something circulating in the fluids of the very young animal —or something secreted by the mother's organs—keeps the micro-organisms completely out," Feldman said. "That must be the explanation." He reached for a bracky weed, and accepted her quick assistance without turning.

"I've had a strong suspicion before. Every kid I came across born after the plague started contracted it between the second and third year. They weren't born with it, and they never contracted it earlier. You see, those filaments are too fine to be held back by any physical barrier."

Chris frowned, and began putting the mice into the small freezing unit. There were plenty of culture tubes ready in the incubator. She selected six, and brought them over. Two for blood, two of amniotic fluid, and two for tests. If anything actually killed the bugs, they would know within a few minutes. But if the suspected substance only inhibited their growth, they'd need a couple of days.

Jake Mullens came in, as he often did, at six o'clock in the morning. Doc was just placing a film in the chamber of the microscope. As Jake watched he set it to full magnification.

"Chris! Take a look at those filaments. They're completely disintegrated—just pulp. And the big cell's bloated to three times normal size. We've proved it! It's in the blood of the foetus!"

Mullens dropped onto the cot after a single look. "Congratulations, Doc. I hope they let you use it. About fifteen big freight rockets just arrived and took up orbital stations just outside the atmosphere. They risked being blown apart in space making the trip that fast—but the Lobby's got the power it needs now. They don't even need automics—they can drop liquid fuel torpedoes from the freighters on the villages whenever they feel like it."

Chris Ryan put another slide down slowly and sank back on her stool. Doc Feldman picked up the slide, and put it into the chamber.

XII

FELDMAN COULD feel the mounting, almost unendurable tension in the village where GHQ was temporarily located long before Mullens drew near enough for the details to register. The people gathered in tight clusters, staring up at the sky where spaceships were circling in low orbits a few miles above the atmosphere. Several men and women were pacing up and down, gesticulating skyward with long, agitated sweeps of their arms.

He stared at one woman in particular, his own body tensing. She was in motion before he could grip Mullens' arm in concern. With a sudden leap into the air, she took off, breaking from a stumbling half-waltz into a run, and then into a frenzied dash. Her hands tore at her clothes, and her mouth was working violently. She was half-way to the top of the nearest dune before a

rifle flashed. Her knees collapsed and she went tumbling backwards down the dune with a despairing shriek.

Almost immediately another figure leaped from one of the houses. He had discarded his aspirator and he took off in the same violent run. But he was falling from lack of air before the second rifle flash ended his struggle.

The people suddenly began to move apart, as if trying to get away from each other. For weeks they had faced the horror of the runners, had accepted the inevitability of sudden, violent death with coolness and courage. But now it was becoming too much for them.

Feldman spent the next few minutes trying to spread the word that there was a possibility of a cure. And it was then that he got his first real shock. The villagers faced him with set expressions, glowering suddenly at him, and ignoring his appeal for blood from younger children.

George Lynn drew him aside and tried to explain it.

"You've been living with a Lobby woman, Doc. It ain't decent and it ain't safe. You got your reasons—and you can be sure she's got hers. It looks like she's getting what she wants, persuading you to help her undermine us from inside. We've seen the Lobby operating on our kids, cutting short their lives, bleeding them dry. That is not going to happen again, Doc, and you better tell her we mean it!"

Feldman swore hotly to himself, realizing that a simple vaccination on a sick child looked like a criminal experimentation, when the high-handed Lobby doctors offered no explanation. The same applied to compulsory removal of the tonsils and appendix. But he didn't understand the bleeding part. He found Chris, and asked her about it, without telling her the rest of it.

"Northport's infant's wing," she answered. "Each department of the hospital has its own blood and plasma banks, and donation is compulsory."

The long arm of the Lobby had reached out to ruin another of his plans. He knew the villagers well enough to realize that they would present a united, unbreakable front on anything such as this.

Two hours later, when Feldman was close to desperation, Judge Ben Wilson drove up and went into the school building. No official meeting had to be called. The crowd was almost treading on his heels.

He faced two dozen villagers, speaking in a voice tremulous with fatigue, a voice that held none of his former assurance. "Southport's going crazy. I got delayed." He paused for breath,

then went on quickly. "Earth is pulling back all of her people. By dawn tomorrow there won't be a man or movable possession left on Mars—except colonials and old men like myself who won't or can't go. They're scared sick. They're closing the books on us. They know the plague is coming from here—"

He paused as Chris drew close to Doc. "But Earth knows about the plague!" she said.

"The top brass of Medical Lobby knows," he acknowledged. "But they're keeping it top-secret. They probably think they'd be condemned for not investigating a disease that has existed for at least fourteen years. Or maybe the order for ships went out before they knew."

Wilson raised his hand, and the audience quieted. "There'll be no atomic bombs. Those freighters don't carry any. But that doesn't make the situation much less critical. Those poor devils in the city bet on the wrong horse. Now they can't even go on eating unless they conquer you and take over your food factories. They were completely dependent on Earth engineers, according to the contract Space Lobby had with Engineering. Now the Engineers are going home.

"That means they've *got* to whip you, and whip you fast. They'll have the shuttle rockets—while there's fuel. They still think Doc Feldman caused the whole trouble, and they'd be happy to kill all of you to get him. And you can't keep out all their spies when there'll be thousands of men coming over to your side because they honestly want to. You've got spies among you right now."

He slumped forward, his words trailing off. Feldman and Chris Ryan started toward him, but a young man Feldman recognized as Dr. Harkness got to his side first. He made a brief examination, and held up his hands.

"It's okay. The judge just fainted from fatigue and excitement. Clear out and let him get some air. Feldman, Ryan, I'd like to see you."

Wilson was recovering by the time the villagers were outside. Harkness left him with Mullens, and motioned for Feldman and Chris to follow him out to his tractor. His face was heavy with worry.

"I've found another epidemic," he told them without attempting to soften the blow. "Over at Marconi, where they were changing back to Earth-normal foods. It started yesterday, and kept me on the run all last night. Now over half the village is down with it. It starts out like a common cold, and runs up a fair fever. Then the skin breaks out all over with red spots."

He was driving off with them as he talked. Chris began ques-

tioning him. She jotted down information concerning remedies Harkness had tried and listed the contents of his medical stock, which had been pilfered from Northport Hospital. At her suggestion, they stopped at the first village they came to and sent a man back to the Laboratory to secure a supply of drugs, carefully advising him to proceed with caution, and giving him instructions as to their destination.

Marconi was a dead village to all outward appearances, with nobody on the streets. The people had gone into hiding, each fearing that his neighbor would be stricken next.

Harkness pointed to one house. "The first case," he said grimly. He waved at the window, and led them inside.

Three people lay on the beds, with damp compresses over their eyes, and a man was stumbling around in the near darkness, trying to tend to the others, though the little spots showed up clearly on his own skin. He grinned weakly.

"Glad to see you, Doc. I guess we're making you a lot of trouble, ain't we?"

Chris gave Doc Feldman no chance to reply. "Measles! Plain, old-fashioned measles," she diagnosed. "Well, at least you had sense enough to protect their eyes. It had to be measles, of course."

Doc nodded slowly, and led them out into the little kitchen on the pretext of washing his hands.

"It's serious, Chris," he said. "It means that we'll have to abandon the whole idea of going back to Earth-normal, at once. Today we have measles. Tomorrow there'll be smallpox, tuberculosis, scarlet fever, and all the other diseases that the Mars-normal metabolism doesn't get. These people are completely susceptible. Their natural immunity has been destroyed.

"In the old days, babies seem to have been reasonably immune during their first months of life. Probably most later immunity came from very mild cases caught then, and never even recognized. Here three generations without direct exposure to Earth-normal disease has wiped all that out. Don't ask me how the germs got here—they always seem to manage. But we can't go on with a treatment for one plague that starts a dozen others."

He gathered up one of the kits, and shrugged. "And Lord knows how long it will take to get the blood I need for the other treatment—*if* it works."

Chris treated four other families. Feldman had to admit that she was efficient. But he felt only relief when Harkness took the kit and hypodermic needles from her at the next house.

"These are my patients, Dr. Ryan," he told her. "I left the

Lobby and came here because I couldn't feel that the colonials were mere livestock. I still feel the same way about them. I appreciate your diagnosis, and I'll gladly accept your ideas for treatment. But it must stop there."

"Dan!" She swung on her heel, her eyes blazing. "Dan, are you going to stand for that?"

"I think you'd better wait in the car, Chris," he said.

Her face froze, and she stormed out. A moment later they heard the tractor crashing off.

But Doc Feldman had no time to think, after that. He and Harkness split up and began methodically administering to the village, spreading the word to abandon the metabolism-switch and isolating the sick as far as they could be isolated.

Jake Mullens sent out two of the other doctors to relieve them late in the evening, along with the bad news that Feldman was beginning to consider a routine part of each day.

"They bombed your laboratory, Doc Feldman," his relief told him. "A shuttle came over about sundown. Jake salvaged some of the stuff and took it to headquarters. But the electron microscope is a total loss. I thought—" he hesitated. "I thought Dr. Ryan was here with you."

Doc exchanged a quick glance with Harkness. "She wasn't in the laboratory?" he asked.

The relief shook his head. "No, she wasn't."

Chris was waiting for him when he came into the little room he'd rigged up as an emergency clinic. Her face was bruised, her uniform disheveled, and her eyes were blazing. She stood up, holding out two large bottles.

"Here's your infant plasma, Dan Feldman—straight from Northport Infant Infirmary! And if you think it was easy to find the young idiot who took my place at Southport, sell him on the idea I'd stolen your cure, and persuade him to get this shipped down in spite of the crazy rush going on, you're a bigger fool than I thought you were."

He tossed off his jacket and dropped onto his bunk. He was too tired to say anything, or to stay awake long enough to thank her.

XIII

WHEN FELDMAN awoke Chris was already up, with the cultures and the microscope set up on a small wooden table by the window. He found no coffee waiting for him, as he'd come to expect, but he made no comment. She moved over to let him look through the little instrument, her features strained.

"The filaments don't show up in this, and the cells look dead to me, Dan," she said. "The

plasma seems to work exactly like the mouse blood."

He checked her results, and ran a few tests of his own. Finally he nodded with complete conviction.

"We'll need volunteers," he said. "Human subjects aren't as complacent as mice, but we have no choice. At least infant plasma isn't toxic. We'll need two groups, infected and non-infected. One in each group for a shot of plasma—and one for bug, accelerator, and plasma. Makes four."

"Two," Chris corrected. "You're not infected. I am. That leaves two."

"Two others, of course," he agreed.

Feldman knew that Jake would be inside the schoolroom, smoking his morning bracky weed and drinking his coffee in leisure. He went in, automatically pulling out his own weed and lighting it. He put the situation up to Jake Mullens without wasting time over it. The rebel chief nodded, and turned to the others.

"How many of you never had the jumping headache?" he asked. He blinked in astonishment when three men nodded out of the eight present. It was surprising that even one had escaped. "Okay, Swanee. Now who's *had* it? Tom? Good."

Mullens' absence from the list was too obviously sensible to need comment. He had to be available for the trouble they were expecting. The two men stood up, tamped out their weeds and headed for the door with Feldman.

Chris had everything set up. Feldman prepared the culture, together with the accelerating chemical that speeded its development and even made reinfection of the same person possible. The first step was over in a matter of minutes.

"That's all," Chris announced.

"All but the waiting," Doc amended.

Swanee dug out a dog-eared pack of cards, pulled over the lab table and began dealing.

The pains began in about forty minutes. Tom gathered up the cards and tossed them into the center of the table. He spoke through his lips without moving his jaw. "Feels the same as it did the first time. Only then it wasn't an experiment. Then, I could get a little relief from painkiller."

It got worse. The pain began to radiate, so that Feldman felt it in his head, and shoulders and neck. He lay on the cot, moaning as softly as he could, and trying to tell himself that forbidding all other drugs had been a wise move. Swanee and Chris experienced no pain at all, since in both of their bloodstreams the already established infection acted as a barrier.

It was the longest day Feldman had ever spent. He watched the

little clock move from one minute to nine over to half a minute, and hang breathless for what seemed like an eternity. He was quite sure that the infection had taken.

The plasma had been strong enough to simulate the normal course of the disease, where the early period was usually spent in agony until someone could be sent to Southport for Medical help or the drugs needed to kill the pain.

Chris had the anodyne tablets already dissolved in water, and Swanee was passing out three lighted bracky weeds. It took a few minutes for the relief to hit Doc—and even after that there was some pain left. He sucked the weed, mashed it out, and began dealing the cards again. He didn't ask whether the others wanted to sleep. It would have been a completely stupid question.

He had a plentiful supply of the painkiller, and he used it liberally during the night, again simulating the natural course of the disease.

Precisely at nine in the morning, Chris began to inject the three men with plasma. Feldman gave her the shot.

Now there was no thought of cards, even. They waited, trying to talk, but with most of their attention on the clock. Doc had estimated that an hour should be a long enough time to show results, but he had forgotten how long an hour could be.

As he swabbed off Tom's neck with alcohol he cursed the ruin of the electron microscope that could have showed results from a bit of nerve tissue. The little microtome obviously hurt, since the enodyne was wearing off. But a tiny section from the swelling came out, and went to Chris. She stared at it for a long moment after putting it under the lens, and then she sighed softly.

"Only dead cells!" she announced.

It was the same with the other tests. The dead cells were unmistakable.

Chris' hands trembled as she prepared the section from her own swelling and inserted it carefully. She tensed, bracing herself to look. When she glanced back, her smile was stiff and frozen. But the long, slow nod was answer enough.

Tom whooped, and went out through the door to notify Mullens. There was enough of the plasma for two hundred injections, and Doc was sure that when the supply was exhausted the villagers would heed his plea for more blood donations from their children. The testimony of two hundred men and women miraculously saved from death could hardly be ignored.

Later, after the two hundred had been injected, Doc stood star-

ing at the empty bottles that had held the plasma. "Maybe we should have halved the dosage, Chris. We've still left a lot of poor devils out there without shots."

"Forget it, Dan. It's all guesswork at this stage. Go to bed."

She kissed him suddenly, slipped on her aspirator, and went out toward the house where Mullens had found her a room to satisfy the proprieties.

Doc pulled the microscope to him and started to look at the slide which was still on it. Then utter weariness overcame him. He leaned his head forward onto his arms, vaguely wondering why Chris had called off the feud.

It was night outside when he awoke. He was lying on the cot, though he still felt cramped and strained. He stirred, groaned, and finally realized that Jake's hand on his shoulder had aroused him.

Mullens shook his head, and stared dully at the microscope on the table. "We took Southport yesterday, Doc," he announced wearily.

Doc sat up abruptly. "You *what?*"

"We took it—lock, stock and barrel. I was counting on the news of the cure to put guts into the men, and it did. They're all set to go on to Northport where you can use the whole hospital to make new plasma. But we'd probably have taken it anyway. There wasn't anything to fight for there, after Earth pulled out. Wilson mistook the last-minute craziness I guess. He failed to realize what the reaction would be—when they looked around and wondered why they were fighting for something that just wasn't there any more."

Doc tried to assimilate the news, to take heart from it. But now that the surprise had worn off, he found somehow that it didn't mean as much as he had expected it would.

"We'll need a lot of plasma for all of Mars," he said. "Nothing else is quite so important now."

"Not so much plasma, maybe," Jake said. "Doc, three of the men you injected were shot down. Runners! Your plasma's no good."

"It takes time to work, Jake. I told you there might be a case or two that would be too close to the thin edge. I told you—"

"They started after we came back from Southport, Doc. There was plenty of time." Mullens dropped a hand on Doc's shoulder, and his face softened. "Harkness tested every man injected. He just finished. Five showed dead bugs. The rest of them hadn't been helped at all."

Doc fumbled for a weed, trying to think. But his thoughts refused to focus. "Five," he said at last.

"Five out of *two hundred*. He found seven out of the same number among men who'd never had

the injections. And what about Swanee? He was jumping around after the test last night, telling how you'd cured him—how he'd seen the dead bugs—when he never had the headache in the first place! He's got them, too, all dead. We tested him again."

Doc could only shake his head. Jake was right. Swanee had supposedly never been infected. Yet Chris had reported dead bugs, and the man had confirmed it. They'd been so ready to believe in miracles that they'd never even noticed the discrepancy.

"There was a bump on his neck—a small one," Doc said slowly. "Jake, he *must* have had it. If he was taking anodyne for something else when he got it, or was unconscious—"

"He was up in Northport six years ago for a kidney operation," Mullens admitted doubtfully. "We had to chip in to pay expenses. But all that doesn't really matter now. What does matter is that we're still shy a cure."

Mullens shook his head. "Doc, we don't judge a man here except by what he is. Nobody's blaming you—maybe the stuff does work now and then. We'll go right ahead with it, when and if we can get it—on that slim off chance. We'll tell everybody you were a trifle over-optimistic, so they'll figure it's a gamble. They'll have something to hope for, that way. And you can keep right on trying."

Doc watched him go out, and reached for his aspirator, just as the door swung open again. Chris must have been standing outside waiting.

"You know?" he asked.

She nodded. "I heard from Harkness. Dan, what about the accelerator? You and Tom both got the disease and got rid of it right here in this room. If something in this room hadn't worked, why did the bug die?"

"You didn't have the accelerator," he pointed out.

She reached for his shoulders, meeting his eyes reluctantly. "I—I've still got live bugs, Dan," she told him. "I thought it was three cures out of four. I decided you might as well have your party without a ghost at the wedding. I blundered pretty badly, didn't I?"

He'd never seen Chris cry before, except in fury. It was a new experience to him, and he found it hard to take. Some of the old feeling he'd tried to keep suppressed came out and began growing on him.

Suddenly she jerked away, shaking her head violently. "The plasma was another of the test discoveries that works all right on the micro-organisms in the bottle, but won't work in the human body. All right. Maybe the accelerator speeds them up in the

bottle, but changes to something completely different in the body —something that finally kills them."

He shook his head. "And maybe some people are just naturally immune after it reaches a certain level—and we ran into coincidence."

"Maybe," she admitted. Then she held out a small container. "Your coffee, Dan."

He smiled at her slowly, and reached for the accelerator bottle.

The answer had to be somewhere in the room. He and Tom had been cured of the massive doses they'd taken in a few hours.

He let the coffee grow cold.

Outside the room, the war went on, drawing toward a close. The supposed cure was good propaganda, if nothing else, and Jake Mullens was widening his territory steadily day after day—usually without more than a token resistance from a few die-hards. Inside the room, the battle was less successful. It hadn't been the accelerator. It hadn't been the tablets of anodyne. They even tried sweeping the floor and using the dust.

Then another test, made with four men Mullens had picked from his close personal friends yielded complete cures after injections with plain distilled water in place of plasma.

The plague speeded up again. About four people out of a hundred seemed to have caught the disease and cured themselves, and they formed a bedrock of faith in Doc's plasma cure which gave hope to the rest.

Northport fell exactly one week later, putting the whole planet in rebel hands.

Jake Mullens came in, wearier than ever. He'd proved to be one of the natural immunes. But the weight of the campaign that could only end in total defeat by the plague, barring an impossible miracle, was worse than any personal worry could have been.

Mullens flipped a flimsy sheet on the table. It was signed by both Space Lobby and Medical Lobby.

Doc read the communication and passed it to Chris.

Mullens pointed upwards. "The war rockets are there, all right," he said. "We knew they'd come. Now all they want is your cure. Either they get it, or they'll blow the planet up. And we have just two days in which to deliver."

XIV

TWO DAYS WAS never enough time for a miracle, Doc Feldman decided, as he packed his notes into a small bag and put it beside his bundle of personal belongings. He glanced around the room for the last time, his sadness increasing when he saw Mullens' gloomy expression.

"Maybe I can bluff them, or maybe they'll string along for a while," Feldman said. "Anyhow, now that they've agreed to take me and my notes in place of the cure I've got to be on that shuttle when it goes back to their men at orbital station."

Mullens nodded. "I don't like selling friends down the river, Doc. But it wouldn't do you any good to be blown up with the planet, I reckon. They won't call off the war rockets when they do get you, of course, but maybe they won't use them either—except as a threat to put the Lobbies back in, stronger than ever."

He stuck out one of his big, awkward hands, clapped the aspirator over his face, and hurried out. Doc picked up his bags and went toward the little tractor where Chris was waiting to take him to Southport and the shuttle rocket that would soon be landing for him.

After that, he'd be on his own. His best course would probably be to insist on talking only to the president of Medical Lobby, and being completely honest about everything. The room here would be kept sealed, in case the Lobby wanted to investigate the reasons for his failure. And his notes had not been altered, which was something that could usually be determined.

At best, there would be a chance for some compromise. At worst, he'd have gained a little time.

"Cheer up, Chris," he said as he climbed through the little airlock on the tractor. "Maybe you and Harkness will turn up the cure yet. You'll have the whole of the Northport Hospital's equipment for research. After all, I found something with no equipment except a wild imagination."

She started the tractor reluctantly. "Shut up, Dan! Or I'll think I'm in love with a complete fool!"

He nodded soberly. "If you insist on feeling that way, then you are. Everything I've accomplished was done because I *was* a fool—and my luck ran out just a little too soon. I'm counting on being a fool as long as I can, in the hope that the solution will eventually turn up. It has to be something in that room."

She nodded, and dropped the subject. They'd been over that desperate statement too many times already. But it kept plaguing him—something in the room, something in the room!

They passed a crowd chasing down a runner. Something in that room could have saved the poor devil. It could even have saved Mars, perhaps.

He tightened his lips and reached for the bracky container. Bracky was something he'd miss on Earth. He'd begun by detesting it, and wound up finding it

was exactly to his taste. He lighted the bracky and sat smoking, watching Chris drive. When it was finished, he lighted another from the butt.

She put out a hand and took it away. "Please, Dan. I can stand the stuff, but I don't like it. And it keeps reminding me of the three of you sitting in that room, trying to be courageous when you didn't ever know whether you'd live through the test."

The answer hit him, full-blown! He turned around abruptly, making a quick grab for the wheel.

"Bracky! It has to be! Chris, drive me back to the village. Jake picked out the second group of men from his close friends—and they happen to have been his friends because they joined him so often in companionable smoking room discussions. The first time, it didn't work for you—because you didn't smoke. It's the only way to account for everything."

She had the rheostat all the way to the floor, and she kept it there. But she shook her head doubtfully. "The figures for bracky smoking and for the immunes may be right. But why do some of the smokers get the disease at all?"

"Why not? It depends on whether they pick up the habit *before* or *after* the disease gets started."

She nodded at that. He twisted it back and forth in his head, trying to find a flaw in his reasoning. But there seemed to be none. The only trouble was that they couldn't send bracky as the cure and have Earth find that it wasn't. No polite note of apology would save them if it failed. They had to be sure.

Mullens saw them coming, and came running toward the laboratory. But Chris stopped the tractor before it reached the building, and let the older man in.

"Get me a dozen men who have the plague. I want the worst cases you have, and ones that Harkness tested himself," Doc ordered. "And pray that the stuff that cures 'em works fast."

Harkness dashed in, bringing the microscope he'd secured from Northport Hospital, and set it up beside the little one Chris had grown accustomed to. More men began coming in a few minutes later, with Mullens very efficiently taking charge.

"Ten minute intervals, to make it two hours for the last volunteer," Doc decided.

Harkness was busy cutting tiny sections from the lumps on the men's necks, while Chris ran them through the microscope to make sure that the bugs were still alive.

Doc handed each man a bracky weed, with instructions to keep smoking, no matter how sick he might become.

There were no results at the end of ten minutes when the first man was tested. The second, at the end of twenty minutes, was also still infected with live bugs. At the half hour test, Chris frowned.

"I can't be sure—take a look, Dan."

He bent over, moving the slide to examine another spot.

"I think so. The next one should tell," he decided.

There was no doubt about the fourth one. The bugs were dead, without a single exception that they could find.

The men went storming out, shouting the incredible news. For a minute, the gathering crowds remained skeptical, remembering the other failure. Then, abruptly, men were screaming, crying, and fighting for the precious bracky, like legions of the damned grabbing for sudden passports from hell.

Mullen swore as he moved toward the door. "We're low on bracky here. Have to get a supply from Edison, I guess, and cart it to the shuttle. Enough for a sample, and to make them want more. It'll be tough, but we'll get it there in time, somehow. Doc, I'm getting drunk tonight! From now on, if Earth wants to keep living, we'll be a free planet. *Free!*"

It was a perfect expression of the feeling of the heads of all the little village groups when they met next day in the courtroom where Judge Wilson had presided for so long. The bracky had gone out toward Earth on the first war rocket ever to be converted to carrying peaceful material at superspeed. It would still take the life-saving cargo days to reach its destination. But the small fragments of dried bracky in Earth's botanical collections had already proved that bracky was the cure.

Harkness, Chris and Feldman had their own ideas, and Doc sat back, content to let Chris talk directly to Earth. He was quite sure she would know exactly what to say, considering that they had gone over the points to be stressed very carefully earlier in the day.

Bargaining was all right in its place. But it served no good purpose in affairs of life and death such as this. They had to see that Earth received all the bracky she needed. It was only right to charge a fair price for it, but they couldn't restrict it by withholding or overcharging. And they could still gain their own ends, without blackmail.

Martian alkaloids were tricky things, and bracky smoke contained a number of them. It would take Earth at least ten years to synthesize the ingredients and they would still cost more than Mars'-grown weed itself. As long as the sources of that weed remained on Mars, and in the

hands of colonials, there would be little likelihood that Earth would deliberately set out to bomb the planet.

Chris wound up her speech with persuasive conviction. "The plague lived a million years, and it's not likely to disappear now. The jumping headache, or Selznick's migraine, is unpleasant enough to make us reasonably certain that there will be a steady, continuous consumption of the weed."

Chris was useful, too, Doc thought, as he studied her. She got things done sometimes, and she could even be sweet about it when she wanted to be. She'd persuaded them to give up their vengeful position, just as she'd finally persuaded him to change his mind about a good many other things.

He'd probably regret marrying her a thousand times—but he'd have regretted it more if he hadn't. Judge Wilson had called him a fool, of course, before performing the ceremony. The judge had also played Mendelssohn for them afterwards, at her request.

Judge Wilson accepted the slow nods of approval from the Council, and began drafting their first official communication to Earth:

To the Government of Earth, Greetings:

On behalf of Jacob Mullens, Acting President of the Martian Council, I have the honor to announce that Mars hereby declares herself a sovereign and independent world. We shall continue to regard Earth as our mother, and to consider the health and welfare of her people as in no way secondary to our own. In all matters which vitally concern both planets we trust that Earth will act with us in a spirit of mutual friendship. We believe that the destruction and utter misery which war makes inevitable and the advantages to be gained from the continuation of peaceful commerce would make any other course unthinkable.

We respectfully request as a pledge of good faith, that such rockets as are now circling our atmosphere be immediately withdrawn. In turn, we give Earth our solemn promise that all efforts will be made to ensure prompt and wide-scale delivery of the bracky weed.

Wilson signed it with his name and title of Acting Secretary—and waited patiently with the others. In less than an hour the last war rockets had vanished from Martian skies.

Doc Feldman stood up slowly, waiting until Chris could join him near the head of the big table. Her eyes were shining when she came at last to stand by his side.

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SSF 15

The Real Earth Satellite Story

To our reviewer goes the credit for an astounding research discovery. The Space Station, as an imaginative concept, was originated by a very famous American.

by SAM MOSKOWITZ

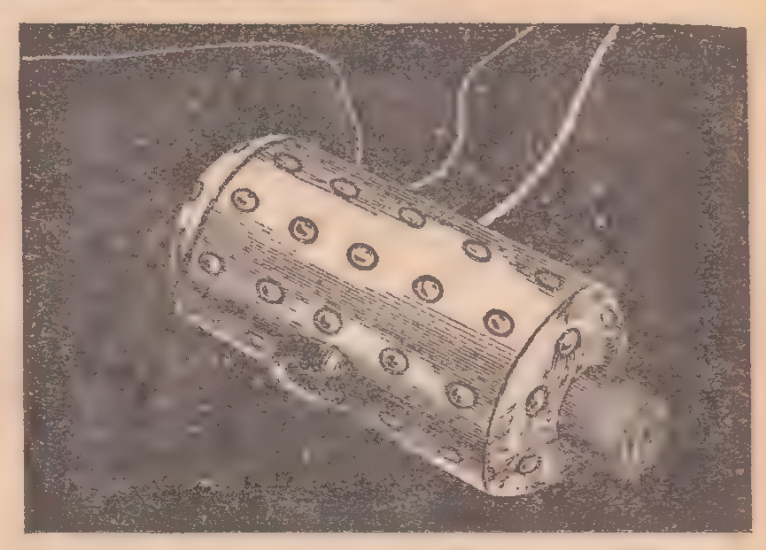
FOR THE RECORD—once and for *all* time—it was a distinguished and world-famous American author who first conceived the original idea of an Earth satellite.

Every fifty years the nations of the world celebrate what is termed the International Geophysical Year and 1957 completes a half-century cycle. Before the year's end the United States hopes to have an artificial Earth satellite revolving around the world. For the first man-made object to rise beyond the Earth's atmosphere into interplanetary space will be launched this year by the United States.

Up until now, the battle as to who initially thought of an Earth satellite, either in fiction or scientific discourse, has been waged be-

© 1957, by Sam Moskowitz

The great hubbed wheel which Capt. Noordung conceived as the proper design for an Earth satellite in 1928, has remained the basic model for all those which followed. A solar mirror on the other side of the wheel collected the sun's heat and used it to convert water into steam to power the unit.



A separate unit for an observatory in which artificial gravity could not be maintained by rotation as in the rotary wheel-like living quarters.

tween Germany and Russia, with the best authorities giving the nod to Germany. Now, as a result of special research, the claims of both countries can be discarded. This distinction can now be claimed by the United States without the slightest reservation.

It is singularly appropriate that the United States should be the first country to construct and blast into orbit an artificial satellite, since

one of its most practical men of letters, Edward Everett Hale, was the first to conceive the idea of an Earth satellite and put it to paper.

Edward Everett Hale (1822-1909), author and theologian, is probably best-known for his short story, "The Man Without a Country." During the nineteenth century his works were popular and respected. He was one of the early contributing editors of *The Atlantic Monthly* where his epochal short novel (approximately 25,000 words), THE BRICK MOON, was serialized as a four part story during the latter part of 1869 and the early part of 1870. It was his last story for that magazine and the *first* story ever to mention an Earth satellite.

The most amazing fact about Hale's early story of a space satellite is that until seven years ago, it was the longest story dealing *only* with the Earth satellite theme ever written! For, unlike the authors and scientists who came after him, Hale did not *ring* in the space station idea as an interesting added thought. He devoted, literally, every single word of his story to the subject.

Early in 1869, when the story was written, scientific knowledge regarding the basic essentials of space travel was still in a rudimentary state, even electric power being a novelty. Therefore, Hale's story should not be judged on an accuracy of scientific detail basis but solely upon its merits as an astonishingly prophetic work of fiction.

In Hale's narrative, funds are collected from wealthy mariners for the purpose of launching an artificial Earth satellite large enough to be seen with the naked eye, and to serve as a reliable means of judging the longitude of ships at sea. In 1869 navigational instruments were few and unreliable. Boats were the primary means of transportation and ships thrown off course after a storm or rough weather experienced great difficulty in figuring their longitude. An artificial moon whose distance from Earth could be accurately established, seemed to be the answer. If the first satellite proved successful, the sponsors of the venture planned to follow it with others.

Explaining the theory on which such an artificial moon project was to be based, Hale used a pea as an example. "If you drove it so fast and far that when its power of ascent was exhausted, and it began to fall, it should clear the Earth," Hale said, "and pass outside the North Pole; if you had given it sufficient power to get half 'round the earth without touching, that pea would clear the Earth forever. It would continue to rotate about the North Pole, above the Feejee Islands, above the South Pole and Greenwich, forever, with the impulse which first cleared our

One of the many amazing prophesies of the incomparable Hugo Gernsback. This time on space stations—27 years ago.

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1930

The Future of Aviation Springs from the Imagination

STATIONS IN SPACE

By HUGO GERNSBACK

ONE of the common misconceptions of the average man, or the layman, about the science of space-flying, is that, in order to hover above the earth, it would be necessary to choose the exact point where the gravitational fields of the earth and moon balance (about 216,000 miles above the earth, and 22,000 miles from the moon). This is an erroneous idea, however; for it is possible to fly continually around the earth without the expenditure of any power in doing so. Once a space-flyer has been given a sufficient initial impulse, it can keep on going forever, comparatively close to the earth's surface, without danger of falling.

Impossible as this may seem, the statement is perfectly true. It will be necessary only to build a rocket ship and elevate it beyond the appreciable atmosphere of the earth—say a trifle over five hundred miles—then give it a sufficient impulse in a direction at right angles to the position of the earth. It will then continue to gravitate around the earth without falling; thus becoming a new satellite; and it will maintain its orbit permanently until it is disturbed by some external force. Of course, at such a distance, it is to be supposed that no atmospheric friction will be encountered to reduce the original speed—which must be in the order of five miles a second. This is rather low, as planetary velocities are considered. Once the space flyer has reached the critical speed, it will continue to revolve around the earth—in a period of less than two hours at this distance—exactly as the moon now revolves about us, and without the need of added propulsive force.

It might be asked: what useful purpose would be served by converting a space-flyer into a permanent, rapidly-revolving satellite of the earth in this manner?

Professor Hermann Oberth, perhaps the greatest authority on interplanetary space, points out many uses for such revolving "space stations," as he calls them. A better word, perhaps, would be "revolving space observatories."

In the first place, from such a height, it will be possible to make any amount of astronomical observations in free space without having to worry about clouds or the interference of the atmosphere. Marvellous photographs can thus be taken, not only of distant stars and planets, but of the earth's surface as well.

One important purpose, as Professor Oberth points out, is the invaluable aid that such an observatory can give to the science of meteorology, or weather prediction, as it is more popularly known.

If the observatory is equipped with radio, instantaneous communication can be had with the various meteorological stations scattered all over the earth and, if there are a number of such observatories circling around the earth (let us say four or eight), they can immediately notify any station on earth as to probable weather conditions. Movements of clouds; fog formations; icebergs, etc., can be immediately reported. If there had been such observatories years ago, one could have prevented the sinking of the *Titanic*, because the ship could have been notified by the circling observatory of the dangers in its path. Such dangers can be spotted much more quickly from above than from the surface of the sea, particularly when there is a thin layer of fog intervening on the sea.

Most of our bad weather is created in the polar regions. It is practically impossible today to know what is brewing in these regions, because they are too extensive to cover with fixed weather stations. But circling observatories, such as Oberth proposes, would notice immediately the breaking up of ice, formations of new ice, pack ice, etc.

Equipped with powerful telescopes, at a distance of 500 miles above the surface of the earth, it would be a simple matter for the scientists in the observatory to spot even smaller objects, such as airplanes. The circling observatory, for instance, would have been in position to watch the tragic flight of Nungesser and Coli across the Atlantic in 1927, and could have given, instantaneously, a report of the exact spot where the plane came down. Expeditions into deserts and into polar regions, as well as into unexplored regions at any place on earth, could thus be easily watched and reports of their progress given instantly.

Such circling observatories can be manufactured at a cost much less than that of even a small cruiser; and the benefit that humanity would derive from such satellite observatories would pay for the investment in short order.

Of course, it would not be necessary for the observers to remain aloft permanently, as they could be relieved at any time by means of smaller space flyers. All that would be necessary is for a rocket-propelled ship to lay a course parallel to the observatory; after which the space ship can be made fast to the observatory. Then after an air-tight connection is effected, exchange of personnel can be made without trouble.

The benefits given above are only a few of those afforded by circling observatories. There are a hundred other important ones, which will easily suggest themselves; and we may be sure that, because the great importance of such space observatories, we will see them in use during the present century.

(turn page)

atmosphere and attraction. If only we could see that pea as it revolved in that convenient orbit, then we could measure the longitude from that, as soon as we knew how high the orbit was, as well as if it were a ring of Saturn."

It was decided to build a globular satellite of brick. Why brick? Because all known metals of the 1869 period would have melted under the terrific acceleration which the moon would have had to achieve to leave Earth's surface. It was believed that brick would prove far more heat-resistant. The satellite was to be coated with a powdery, rock-like substance which would be melted by atmospheric friction after a short interval, and form into a porcelainized protective coating to keep the satellite airtight.

The Brick Moon was to be thrown aloft by centrifugal force through the use of two flywheels built of oak and pine and hooped with iron. Though such a method would be out of the question as a means of launching any space missile from the surface of the Earth, it actually would work on a small moon, or planetoid of extremely low mass. As late as 1923, Clement Fezandie, author of a series of stories called "Doctor Hackensaw's Secrets," actually proposed centrifugal force as a method of space propulsion in a very ingenious little tale published in *Science and Invention*. It was called, "A Car for the Moon."

In Hale's story it was decided to throw the Brick Moon into an orbit about 4,000 miles above the Earth. The reason this figure was decided upon was that at any lesser distance, the artificial satellite would eclipse three hours every night, thus severely limiting its use for navigation.

The Brick Moon was to be two hundred feet in diameter. That size was dictated by the fact that telescopes of the year 1869 could just barely pick out a 250-foot object on the moon and it was felt that a 200-foot artificial satellite, 4,000 miles aloft, should be as readily visible to the naked eye or with ordinary opera glasses.

A second moon was to follow shortly after the first and for maximum visibility it was decided that one moon would follow the meridian over Greenwich and the other over New Orleans.

The interior of the Brick Moon was braced by a series of ten round, hollow balls, each held into place by groined arches, and with the space between the balls designed to serve as insulation.

The Brick Moon was built in a wilderness, but in the vicinity there was sufficient water power to activate the flywheels. The workers started construction from the inside out, utilizing the round inner globes as their sleeping

quarters, and keeping abundant supplies in storage.

One night, shortly before the completion of the Brick Moon, it accidentally rolled forward onto the flywheel mechanism and was catapulted into space. Fortunately, at the time, the workmen—and their wives—were all sleeping relaxed in their hammocks. This saved them from instant death. The use of hammocks to withstand the pressures of take-off, it might be noted, is scarcely outdated even today.

The Brick Moon unexpectedly carried with it into space quantities of air and even some soil and plant life.

An orbit of 5,000 miles was immediately established above the Earth, the departure from the original estimate being due to the unequal weight distribution in the Moon. The satellite turned on its axis every seven hours. Telescopes could detect objects five feet or more in length on the surface, so communication was easily established. The Brick Moon inhabitants simply cut out letters and placed them in plain view.

The weight of each individual on the Brick Moon was estimated at three-tenths of an ounce. A plan to shoot a man up in an asbestos suit and air helmet was debated, and wisely abandoned, and after careful calculations, a bag of supplies was thrown up. The friction from the atmosphere burned the bag open. A few of the supplies reached the surface of the Moon, but most of them went into miniature orbits around the satellite.

The inhabitants found themselves enduring extremes of tropical heat and freezing cold when they walked as much as fifty paces on the surface of the satellite.

The Brick Moon never returned to Earth, but the thirty-seven men and women aboard found ingenious, if doubtful, means of raising food and surviving. Their early adjustments were detailed but their ultimate fate was left in doubt.

In 1899, the works of Edward Everett Hale were collected by Little, Brown and Company of Boston, and published as a set. "The Brick Moon" was reprinted in Volume Four. Hale prefaced the book with an introduction which secures still further the remarkable fact that he was the earliest known person to conceive the idea of an artificial Earth satellite. The idea was inspired, he said, by the reading of Richard Adams Locke's famous "Moon Hoax," which was published in *The New York Sun* in 1835. The "Moon Hoax" was a fabricated true story of life on the moon which fooled the world precisely as did Orson Welles' equally famous "War of the Worlds," broadcast in 1938.

Hale went on to say that while attending Cambridge University in

1838, the idea grew from "an old chat, dreams and plans of college days" and was finally written in the working room of his brother Nathan at Union College, Schenectady, in 1869, where Nathan held a professorship in English.

However, it is important and interesting to note that "The Brick Moon" appeared in book form in an earlier collection of Hale's stories titled "His Level Best and Other Stories" published by Robert Brothers of Boston, in 1872. This book was reissued the following year—in 1873—by J. R. Osgood and Company and still another edition of the book was brought out again by Roberts Brothers in 1877.

Then, as now, astronomers were among the most faithful devotees of science fiction. In 1877, seven years after the appearance of Hale's story in *The Atlantic Monthly,* Asaph Hall, astronomer of the National Observatory, was the first to observe the two moons on Mars. Overjoyed by his discovery, he remembered Hale's story and wrote to the author praising its imaginative brilliance and finally concluding: "The smaller of these two moons is a veritable Brick Moon."

"The Brick Moon" is a serious story and not an attempt at humor. A good deal of its scientific ideas are decidedly off base, but others are almost miraculously close to the mark. As fiction, "The Brick Moon" reads easily, but like all of Hale's work, with the exception of "The Man Without a Country," it would have been destined for literary oblivion had it not been so imaginatively prophetic.

As a result of recent developments, it seems more than likely that "The Brick Moon" will attain a peculiar literary immortality all its own. Indeed, its fame could far outstrip "The Man Without a Country."

Hale's story, by reason of the definiteness of its creation—an artificial satellite encircling the Earth —and by reason of its date of publication in 1869—establishes him unquestionably as the first man to conceive of an Earth satellite or space station anywhere in the world.

The idea of manipulating an existing satellite, the moon itself, for illuminating the cities of Earth at night was projected by the Frenchman Paschall Grousset, writing under the pen name of Andre Laurie, in "The Conquest of the Moon." This book was published in 1889 in London and appeared in France under the title "Sélené Cie," slightly before or about the same date. Eventually it was serialized in America as "A Month In the Moon" beginning in the February 1897 issue of *Argosy.* Grousset was an acolyte of Jules Verne, having collaborated with him on "The Wreck of

the Cynthia," published in 1885. He went on to write other science fiction stories which proved extremely popular in France and were later reprinted in England.

Grousset's idea of pulling the moon from its orbit by the use of giant magnets and bringing it closer to the Earth was scarcely practical and quite out of bounds as a realistic contribution to artificial satellite literature. But in all justice, the novel is surprisingly readable, even today.

The space station story in Europe originated in Germany, and Willy Ley, the world's leading popularizer of space travel for the larger reading public, and the outstanding expert on the history of rocketry, traced the space station in that country to Kurd Lasswitz.

Kurd Lasswitz' novel, "On Two Planets," was a European version of a best-seller when it appeared in Germany in 1897. It has been translated into many languages, and is still in print in Germany today. It is a straight interplanetary story, in which Martians visit the Earth only to discover that because of the peculiarities of their anti-gravity space travelling equipment they will be forced to build two space stations above the Earth. Interplanetary voyagers land on the station and are shuttled to the Earth. The station, as Lasswitz conceived it, very much parallels the spoked-wheel stations of today's design.

It is hard to deprive Lasswitz of the credit for popularizing the space station in the German mind. His book remained outstandingly popular in Germany up until the Nazis assumed power and it is inconceivable that anyone sincerely interested in space travel in that country would not have been familiar with it. Similarly, according to Willy Ley, Konstantin E. Ziolkovsky, honored as the father of space travel in Russia, got around to mentioning space stations in his articles early in the century. A good case, based on circumstantial evidence, could be made out to prove that Ziolkovsky got the idea from Lasswitz.

Ziolkovsky could read and write German. His father was a Pole and well-to-do. It is scarcely beyond the bounds of probability that he could also read Polish. Lasswitz's book, a best-seller, was available in both German and Polish. Is it likely that a man as devoted to the concept of space travel as the record shows Ziolkovsky to have been, would not have tried to obtain and read a copy of "On Two Planets?"

If this train of logic is correct, it disposes of Ziolkovsky as a pioneer thinker in the domain of Earth satellites, especially since the next great name in the historical progression of the idea was Professor Hermann Oberth, a German who could *not* read Russian. Oberth, apparently on his

own, outlined the theory and mathematics of modern spaceflight, and almost inadvertently, added to his book, published in 1923, a few pages about Earth satellites.

To the previous ideas of Earth satellites, he suggested the possibility of creating artificial gravity by having two units fastened by wire ropes revolving about one another. He created the notion of building a reflecting mirror in space which would gather heat from the sun and redirect it to the surface of the Earth, either as a means of heating or destruction.

However, while Oberth may have been the greatest mathematical theoretician on the subject of Earth satellites, a Captain in the Austrian reserve, who was also a graduate engineer, writing under the name of Captain Herman Noordung, A.D., M.E. (real name: Captain Potocnik), was to become the greatest instrument for popularizing Earth satellites in the public mind.

He wrote the first book, which, except for some introductory and ground material on the physics of space travel, was primarily devoted to the subject of a space station. It was entitled "The Problems of Space Flying," and was published in Berlin in 1928. It is a truly remarkable work. Tipping his hat in polite acknowledgement in the general direction of Herman Oberth, Noordung began to outline, in considerable scientific detail, most important aspects of building, maintaining, and using an Earth satellite.

Noordung did more than explore ideas. He actually established methods of eating and drinking, heating, air supply, communication, safety, movement outside the station, including the design and substance of space suits, power, light, design, placement of living quarters, methods of observation and dozens of other vital considerations.

Oberth had figuratively said that a space station was possible —that it would be good to have one and that it would serve useful functions. Noordung caught the ball from there, and went on to relate, in considerable detail just why a station was practical, how to go about building one in the most realistic fashion and the methods employed in performing the functions.

Absorbed with detail, Noordung neglected to do much research on the necessary orbit of a proposed station. This lack was filled in by Count Guido von Pirquet, in a series of articles in the official organ of the German Society for Space Travel, *The Rocket*. Since von Pirquet's articles appeared later in the year than Noordung's book, and since they primarily covered ground which Noordung had neglected—Pirquet was the secretary of the Austrian Society

for Space Travel Research and Noordung was also an Austrian—it seems quite probable that Noordung's book inspired Pirquet.

Further, Otto Willi Gail, a member of the German rocket group and an outstanding German science fiction writer, had published a novel later that same year titled "The Stone From the Moon." Both of Gail's two previous novels had been basic, thoroughgoing, detail-by-detail descriptions of how to get to the moon. Neither had ever so much as mentioned an Earth satellite. But his third novel devoted chapters, in considerable scientific detail, to a space station. It was called "Astrofel," and it incorporated a number of Noordung's ideas as well as some further brilliant improvisations of his own.

While all this was transpiring, back in the United States Hugo Gernsback had left The Experimenter Publishing Company, under whose aegis he had established the *FIRST* science fiction magazine, *Amazing Stories,* in 1926 and formed the Stellar Publishing Corporation, which launched four new science fiction magazines, *Science Wonder Stories, Air Wonder Stories, Science Wonder Quarterly* and *Scientific Detective Monthly.*

Gernsback was looking for something different to attract the attention of the public to his new periodicals. He could read German. He heard of and imported Noordung's book. Francis M. Currier translated the novel which appeared as a three-part serial beginning in the July, 1929 issue of *Science Wonder Stories.*

Dozens of drawings from the German book were reproduced. However, on the cover of the August, 1929 number, Austrian born artist Frank R. Paul—today regarded as the dean of American science fiction illustrators—did a full color portrayal of the space station as conceived by Noordung. In all probability it is the first picture of a space station to appear in the United States, and the first color interpretation of an Earth satellite in history. Since Paul was a trained mechanical and architectural draftsman as well as an imaginative interpreter of ideas, his rendition was minutely faithful to the scientific description.

Gernsback, imaginatively impressed by the idea of space stations, did not stop there. He then imported Otto Willi Gail's novel, "The Stone From the Moon" and published it complete in the Spring, 1930 issue of *Science Wonder Quarterly.* Frank R. Paul again came through with an inspired recreation of Gail's Earth satellite in full color on the cover, in addition to half-a-dozen skillful and detailed black-and-white interiors.

Gernsback then went on record

with one of his famous predictions, so many of which have come true. Writing in an editorial in the April, 1930 issue of his magazine *Air Wonder Stories,* titled "Stations In Space," Gernsback said: "We may be sure that because of the great importance of such observatories we shall see them in use during the present century."

So the Earth satellite was popularized in this country and made an integral part of science fiction. More than that, Noordung's book, printed in *Science Wonder Stories,* became the science primer for space travel writing. Under Gernsback's inspired insistence, the scientific ideas in that book formed the core of basic methods of space travel used by American writers. Noordung's text was the basic and Gail's novel was the example of how informed writers successfully incorporate accurate science to create a more plausible interplanetary story.

David Lasser, then managing editor of Gernsback's science fiction magazines, wrote the first book in a popular vein on space travel to appear in the United States and England. It was titled "The Conquest of Space" and was published in 1931. Lasser was at that time president of the newly formed American Interplanetary Society. His volume contained the first serious and extensive fact treatment of Earth satellites by an American.

With the impetus provided by Gernsback's enthusiastic and effective promotion, Earth satellite stories and stories based upon similar principles became increasingly popular.

Science Wonder Stories and *Air Wonder Stories* combined and appeared collectively as *Wonder Stories.* The January, 1931 issue of that magazine carried "Satellite of Doom" by D. D. Sharp, a tale of a ship which establishes an orbit around the Earth and has to find a means of breaking that orbit and returning to the surface.

The competing magazine *Amazing Stories* projected the idea of building an Earth satellite and then pushing it into an orbit forty-one million miles from the sun in order to generate power for the Earth. The illustrious Murray Leinster wrote that one, "Power Planet," for the June, 1931 issue.

The following month Neil R. Jones had "The Jameson Satellite," the first of the popular, long-lived Professor Jameson series in which a man provides that after his death, his coffin is to be shot into space in an orbit around the Earth.

By 1936, general fiction magazine *Argosy* was publishing "Space Station No. 1" by Manly Wade Wellman, about an artificial refueling station between Mars and

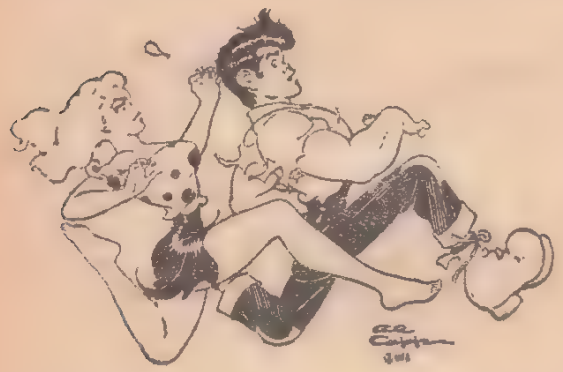
Jupiter and space station stories had become a permanent facet of science fiction and world literature.

The Atlantic Monthly, now celebrating its 100th anniversary year, can well point with pride to its having initially published "The Brick Moon" in the October, November and December, 1869 issues. The story proved so popular, that a short sequel, "Life in the Brick Moon" appeared in the February 1870 number. The two stories were combined under the single title of "The Brick Moon" for all the book versions. As part of its 100th anniversary celebration, the *Atlantic Monthly,* could do far worse than reprint this historic epic.

But most of all, it is important to remember that the battle over the initial writer who first conceived the original idea of an Earth satellite has at last been decided—and that Old Glory now waves supreme where strife once raged incessantly. To the author of "A Man Without a Country" we are indebted—both in retrospect and today—for a history-making imaginative triumph.

Space helmets off to—Edward Everett Hale.

AL CAPP'S Wondrous LI'L ABNER Next Issue



There is no other cartoonist of our age who can achieve quite the bold, imaginative stride of Al Capp, the creator of the serial comic strip, *Li'l Abner.* So world-wide is his reputation, so astounding his mastery of creative satire, that it is not surprising that TIME has called him the best-read humorist in U. S. history, and HARPER'S MAGAZINE has said: "To find his peer in richness of invention we must go back to Swift or Dante." What is perhaps not quite so well known is the fact that Al Capp has always taken a keen, lively and very personal delight in science fiction. Those of us who attended the 14th World Science Fiction Convention in New York last September will not be likely to forget the talk he gave on that occasion, for it was a brilliant summary of what science fiction has meant to him across the years. Having been largely instrumental in arranging for Mr. Capp's presence at the WSFC banquet, SATELLITE now takes pride in presenting, in the very next issue, an Al Capp feature of the first magnitude—an editorial analysis of his ingenious mind and art, *with actual Li'l Abner cartoons illustrating in thrilling narrative form* how close to Al Capp's heart—and to the steady, bright flame of his creative genius—are the twin fields of science fiction and science fantasy.

THE MAN WHO

There is more untapped wealth in the sea than at Fort Knox or Kimberley. Getting at it should be easy, too. Just ignore the joker!

by ARTHUR C. CLARKE

THE ADVENTURES of Harry Purvis, as he springs them on us just before closing-time at the "White Hart", have a kind of mad logic that makes them convincing by their very improbability. As his complicated but neatly dovetailed stories emerge, one becomes lost in a sort of baffled wonder.

Surely, you say to yourself, no one would have the nerve to make *that* up—such absurdities only occur in real life, not in fiction. And so criticism is disarmed, or at any rate discomfitted, until Drew shouts, "Time, gentlemen, *pleeeze!*" and throws us all out into the cold hard world.

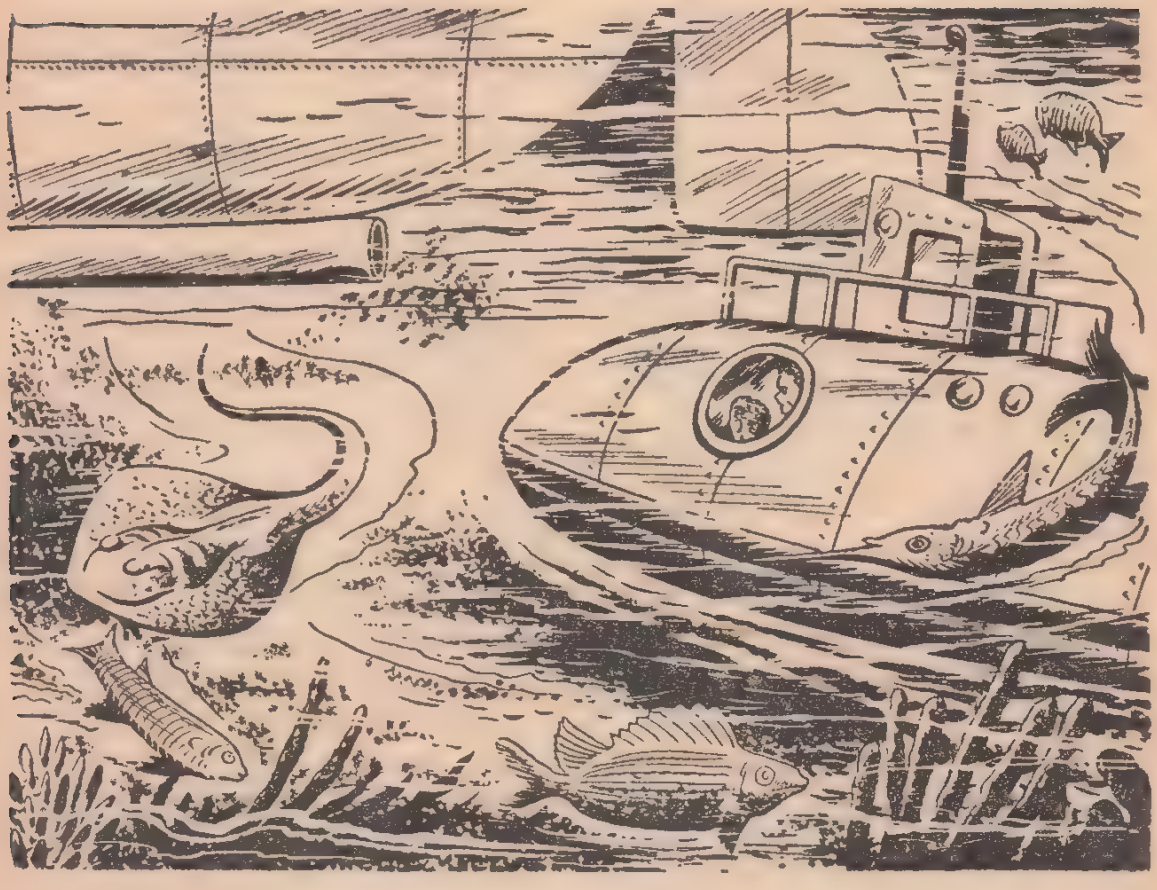
Consider, for example, the unlikely chain of events which involved Harry in the following adventure. If he'd wanted to invent the whole thing, surely he could have managed it a lot more simply. There was not the slightest need, from the artistic point of view, to have started at Boston to make an appointment off the coast of Florida, and I'm quite certain he must have realized that.

Harry seems to have spent a good deal of time in the United States, and to have quite as many friends there as he has in England. Sometimes he brings them to the "White Hart", and sometimes they leave again under their own power. Often, however, they succumb to the illusion that beer which is tepid is also innocuous.

I am being unjust to Drew: his beer is *not* tepid. And if you insist, he will give you, for no extra charge, a piece of ice every

© 1957, by Arthur C. Clarke

PLOUGHED THE SEA



bit as large as a postage-stamp.

This particular saga of Harry's began, as I have indicated, at Boston, Mass. He was staying as house-guest of a successful New England lawyer when one morning his host said, in the casual way Americans have: "Let's go down to my place in Florida. I want to get some sun."

"Fine," said Harry, who'd never been to Florida. Thirty minutes later, to his considerable surprise, he found himself moving south in a red Jaguar at a formidable speed.

The drive in itself was an epic worthy of a complete story. From Boston to Miami is a little matter of 1,568 miles—a figure which, according to Harry, is now engraved on his heart. They covered the distance in thirty hours, frequently to the sound of ever-

receding police sirens as frustrated squad cars dwindled astern. From time to time considerations of tactics involved them in evasive maneuvers and they had to shoot off into secondary roads.

The Jaguar's radio tuned in to all the police frequencies, so they always had plenty of warning if an interception was being arranged. Once or twice they just managed to reach a state line in time, and Harry couldn't help wondering what his host's clients would have thought had they known the strength of the psychological urge which was obviously getting him away from them. He also wondered if he was going to see anything of Florida at all, or whether they would continue at this velocity down US 1 until they shot into the ocean at Key West.

They finally came to a halt sixty miles south of Miami, down on the Keys—that long, thin line of islands hooked on to the lower end of Florida. The Jaguar angled suddenly off the road and weaved a way through a rough track cut in the mangroves. The road ended in a wide clearing at the edge of the sea, complete with dock, thirty-five foot cabin cruiser, swimming pool, and modern ranch-type house. It was quite a nice little hideaway, and Harry estimated that it must have cost the best part of a hundred thousand dollars.

He didn't see much of the place until the next day, as he collapsed straight into bed. After what seemed far too short a time, he was awakened by a sound like a boiler factory in action. He showered and dressed in slow motion, and was reasonably back to normal by the time he had left his room. There seemed to be no one in the house, so he went outside to explore.

By this time he had learned not to be surprised at anything, so he barely raised his eyebrows when he found his host working down at the dock, straightening out the rudder on a tiny and obviously home-made submarine. The little craft was about twenty feet long, had a conning-tower with large observation windows, and bore the name *Pompano* stenciled on her prow.

After some reflection, Harry decided that there was nothing really very unusual about all this. About five million visitors come to Florida every year, most of them determined to get on or into the sea. His host happened to be one of those fortunate enough to indulge in his hobby in a big way.

Harry looked at the *Pompano* for some time, and then a disturbing thought struck him. "George," he said, "do you expect me to go down in that thing?"

"Why, sure," answered George, giving a final bash at the rudder.

"What are you worried about? I've taken her out lots of times—she's safe as houses. We won't be going deeper than twenty feet."

"There are circumstances," retorted Harry, "when I should find a mere six feet of water more than adequate. And didn't I mention my claustrophobia? It always comes on badly at this time of year."

"Phooey," said George. "You'll forget all about that when we're out on the reef." He stood back and surveyed his handiwork, then said with a sigh of satisfaction. "Looks okay, now. Let's have some breakfast."

During the next thirty minutes, Harry learned a good deal about the *Pompano*. George had designed and built her himself, and her powerful little Diesel could drive her at five knots when she was fully submerged. Both crew and engine breathed through a snorkle tube, so there was no need to bother about electric motors and an independent air supply. The length of the snorkle limited dives to twenty-five feet, but in these shallow waters this was no great handicap.

"I've put a lot of novel ideas into her," said George enthusiastically. "Those windows, for instance—look at their size. They'll give you a perfect view, yet they're quite safe. I use the old Aqualung principle to keep the air-pressure in the *Pompano* exactly the same as the water-pressure outside, so there's no strain on the hull or the ports."

"And what happens," asked Harry, "if you get stuck on the bottom?"

"I open the door and get out, of course. There are a couple of spare Aqualungs in the cabin, as well as a life raft with a waterproof radio, so that we can always yell for help if we get in trouble. Don't worry—I've thought of everything."

"Famous last words," muttered Harry. But he decided that after the ride down from Boston he undoubtedly had a charmed life: the sea was probably a safer place than US 1 with George at the wheel.

He made himself thoroughly familiar with the escape arrangements before they set out, and was fairly happy when he saw how well designed and constructed the little craft appeared to be. The fact that a lawyer had produced such a neat piece of marine engineering in his spare time was not in the least unusual. Harry had long ago discovered that a considerable number of Americans put quite as much effort into their hobbies as into their professions.

They chugged out of the little harbor, keeping to the marked channel until they were well clear of the coast. The sea was calm

and as the shore receded the water became steadily more and more transparent. They were leaving behind the fog of pulverized coral which clouded the coastal waters, where the waves were incessantly tearing at the land. After thirty minutes they had come to the reef, visible below them as a kind of patchwork quilt above which multicolored fish pirouetted to and fro.

George closed the hatches, opened the valve of the buoyancy tanks, and said gaily, "Here we go!"

The wrinkled silk veil lifted, crept past the window, distorting all vision for a moment—and then they were through, no longer aliens looking into the world of waters, but denizens of that world themselves. They were floating above a valley carpeted with white sand, and surrounded by low hills of coral. The valley itself was barren but the hills around it were alive with things that grew, things that crawled and things that swam. Fish as dazzling as neon signs wandered lazily among the animals that looked like trees.

It seemed not only a breathtakingly lovely but also a peaceful world. There was no haste, no sign of the struggle for existence. Harry knew very well that this was an illusion, but during all the time they were submerged he never saw one fish attack another. He mentioned this to George.

"Yes, that's a funny thing about fish," said George. "They seem to have definite feeding times. You can see barracuda swimming around and if the dinner gong hasn't gone the other fish won't take any notice of them."

A ray, looking like some fantastic black butterfly, flapped its way across the sand, balancing itself with its long, whiplike tail. The sensitive feelers of a crayfish waved cautiously from a crack in the coral, the exploring gestures reminding Harry of a soldier testing for snipers with his hat on a stick. There was so much life, of so many kinds, crammed in this single spot that it would take years of study to recognize it all.

The *Pompano* cruised very slowly along the valley, while George gave a running commentary.

"I used to do this sort of thing with the Aqualung," he said, "but then I decided how nice it would be to sit in comfort and have an engine to push me round. Then I could stay out all day, take a meal along, use my cameras and not give a damn if a shark was sneaking up on me. There goes a tang. Did you ever see such a brilliant blue in your life? Besides, I could show my friends around down here while still being able to talk to them. That's one big handicap with ordinary diving gear—you're deaf and dumb and have to talk in sign.

Look at those angel-fish. One

day I'm going to fix up a net to catch some of them. See the way they vanish when they're edge-on! Another reason why I built the *Pompano* was so that I could look for wrecks. There are hundreds in this area—it's an absolute graveyard.

"The *Santa Margarita* is only about fifty miles from here, in Biscayne Bay. She went down in fifteen ninety-five with seven million dollars of bullion aboard. And there's a little matter of sixty-five million off Long Cay, where fourteen galleons sank in seventeen fifteen. The trouble is, of course, that most of these wrecks have been smashed up and overgrown with coral, so it wouldn't do you a lot of good even if you did locate them. But it's fun to try."

By this time Harry had begun to appreciate his friend's psychology. He could think of few better ways of escaping from a New England law practice. George was a repressed romantic—and not such a repressed one, either, now that he came to think of it.

They cruised along happily for a couple of hours, keeping in water that was never more than forty feet deep. Once they grounded on a dazzling stretch of broken coral, and took time off for liverwurst sandwiches and glasses of beer.

"I drank some ginger beer down here once," said George. "When I came up the gas inside me expanded and it was a very odd sort of feeling. Must try it with champagne some day."

Harry was just wondering what to do with the empties when the *Pompano* seemed to go into eclipse as a dark shadow drifted overhead. Looking up through the observation window, he saw that a ship was moving slowly past twenty feet above their heads. There was no danger of a collision, as they had pulled down their snort for just this reason and were subsisting for the moment on their capital as far as air was concerned. Harry had never seen a ship from underneath and began to add another novel experience to the many he had acquired today.

He was quite proud of the fact that, despite his ignorance of matters nautical, he was just as quick as George at spotting what was wrong with the vessel sailing overhead. Instead of the normal shaft and screw, this ship had a long cylindrical metal tunnel running the length of its keel. As it passed above them, the *Pompano* was rocked by the sudden rush of water.

"I'll be damned!" said George, grabbing the controls. "That looks like some kind of underwater jet propulsion system. It's about time somebody beside members of the squid family tried one out. Let's have a look."

He pushed up the periscope, and discovered that the ship slowly cruising past them was the *Val-*

ency, of New Orleans. "That's a funny name," he said. "What does it mean?"

"I would say offhand," answered Harry, "that it means the owner is a chemist—except for the fact that no chemist would ever make enough money to buy a ship like that."

"I'm going to follow her," decided George. "She's only making five knots, and I'd like to see how that dingus works."

He elevated the snort, got the diesel running, and started in pursuit. After a brief chase, the *Pompano* got to within fifty feet of the *Valency,* and Harry felt rather like a submarine commander about to launch a torpedo. They couldn't miss from so short a distance.

In fact, they nearly made a direct hit. For the *Valency* suddenly slowed to a halt, and before George realized what had happened, he was alongside her.

"No signals!" he complained, without much logic.

A minute later, it was clear that the maneuver was no accident. A lasso dropped neatly over the *Pompano's* snorkle and they were efficiently gaffed. There was nothing to do but to emerge, rather sheepishly, and make the best of it.

Fortunately, their captors were reasonable men and could recognize the truth when they heard it. Fifteen minutes after coming aboard the *Valency,* George and Harry were sitting on the bridge while a uniformed steward brought them highballs and they listened attentively to the theories of Dr. Gilbert Romano.

They were still both a little overawed at being in Dr. Romano's presence: it was rather like meeting a live Rockefeller or a reigning du Pont. The Doctor was a phenomenon virtually unknown in Europe and unusual even in the United States—the big scientist who had become a bigger business man. He was now in his late seventies and had just been retired—after a considerable tussle—from the chairmanship of the vast chemical engineering firm he had founded.

It is rather amusing, Harry told us, to notice the subtle social distinctions which differences in wealth can produce even in the most democratic country. By Harry's standards, George was a very rich man: his income was around a hundred thousand dollars a year.

But Dr. Romano was in another price range altogether, and had to be treated accordingly, with a kind of friendly respect which had nothing to do with obsequiousness. On his side, the Doctor was perfectly free and easy; there was nothing about him that gave any impression of wealth, if one ignored such trivia as hundred-and-fifty-foot ocean-going yachts.

The fact that George was on

first-name terms with most of the Doctor's business acquaintances helped to break the ice and to establish the purity of their motives. Harry spent a boring half hour while business deals ranging over half the United States were discussed in terms of what Bill So-and-so did in Pittsburgh, who Joe Somebody Else ran into at the Bankers' Club in Houston, how Clyde Thingummy happened to be playing golf at Augusta while Ike was there.

It was a glimpse of a mysterious world where immense power was wielded by men who all seemed to have gone to the same colleges, or who at any rate belonged to the same clubs. Harry soon became aware of the fact that George was not merely paying court to Dr. Romano because that was the polite thing to do, George was too shrewd a lawyer to miss this chance of building up some good-will, and appeared to have forgotten all about the original purpose of their expedition.

Harry had to wait for a suitable gap in the conversation before he could raise the subject which really interested him. When it dawned on Dr. Romano that he was talking to another scientist, he promptly abandoned finance and George was the one who was left out in the cold.

The thing that puzzled Harry was why a distinguished chemist should be interested in marine propulsion. Being a man of direct action, he challenged the Doctor on this point. For a moment the scientist appeared a little embarrassed and Harry was about to apologize for his inquisitiveness—a feat that would have required a real effort on his part. But before he could do this, Dr. Romano had excused himself and disappeared into the bridge.

He came back five minutes later with a rather satisfied expression, and continued as if nothing had happened.

"A very natural question, Mr. Purvis," he chuckled. "I'd have asked it myself. But do you really expect me to tell you?"

"Er—it was just a vague sort of hope," confessed Harry.

"Then I'm going to surprise you—surprise you twice, in fact. I'm going to answer you, and I'm going to show you that I'm *not* passionately interested in marine propulsion. Those bulges on the bottom of my ship which you were inspecting with such great interest do contain the screws, but they also contain a good deal else as well.

"Let me give you," continued Dr. Romano, now obviously warming up to his subject, "a few elementary statistics about the ocean. We can see a lot of it from here—quite a few square miles. Did you know that every cubic mile of seawater contains a hundred and fifty *million* tons of minerals."

"Frankly, no," said George. "It's an impressive thought."

"It's impressed me for a long time," said the doctor. "Here we go grubbing about in the earth for our metals and chemicals, while every element that exists can be found in sea water. The ocean, in fact, is a kind of universal mine which can never be exhausted. We may plunder the land, but we'll never empty the sea.

"Men have already started to mine the sea, you know. Dow Chemicals have been taking out bromine for years: every cubic mile contains about three hundred thousand tons. More recently, we've started to do something about the five million tons of magnesium per cubic mile. But that sort of thing is merely a beginning.

"The great practical problem is that most of the elements present in sea-water are in such low concentrations. The first seven elements make up about ninety-nine percent of the total, and it's the remaining one percent that contains all the useful metals except magnesium.

"All my life I've wondered how we could do something about this, and the answer came during the war. I don't know if you're familiar with the techniques used in the atomic energy field to remove minute quantities of isotopes from solutions: some of those methods are still pretty much under wraps."

"Are you talking about ion-exchange resins?" hazarded Harry.

"Well—something similar. My firm developed several of these techniques on A.E.C. contracts, and I realized at once that they would have wider applications. I put some of my bright young men to work and they have made what we call a molecular sieve.

"That's a mighty descriptive expression. In its way, the thing *is* a sieve, and we can set it to select anything we like. It depends on very advanced wave-mechanical theories for its operation, but what it actually does is absurdly simple. We can choose any component of sea-water we like, and get the sieve to take it out. With several units, working in series, we can take out one element after another. The efficiency's quite high, and the power consumption negligible."

"I know!" yelped George. "You're extracting gold from sea-water!"

"Huh!" snorted Dr. Romano in tolerant disgust. "I've got better things to do with my time. Too much damn gold around, anyhow. I'm after the commercially useful metals—the ones our civilization is going to be desperately short of in another couple of generations. And as a matter of fact, even with my sieve it wouldn't be worth going after gold. There are only about fifty pounds of the stuff in every cubic mile."

"What about uranium?" asked Harry. "Or is that scarcer still?"

"I rather wish you hadn't asked that question," replied Dr. Romano with a cheerfulness that belied the remark. "But since you can look it up in any library, there's no harm in telling you that uranium's two hundred times *more* common than gold. About seven tons in every cubic mile—a figure which is, shall we say, distinctly interesting. So why bother about gold?"

"Why indeed?" echoed George.

"To continue," said Dr. Romano, duly continuing, "even with the molecular sieve, we've still got the problem of processing enormous volumes of sea-water. There are a number of ways one could tackle this. You could build giant pumping stations, for example. But I've always been keen on killing two birds with one stone, and the other day I did a little calculation that gave the most surprising result.

"I found that every time the *Queen Mary* crosses the Atlantic, her screws chew up about a tenth of a cubic mile of water. Fifteen millions tons of minerals, in other words. Or to take the case you indiscreetly mentioned—almost a ton of uranium on every Atlantic crossing. Quite a thought, isn't it?

"So it seemed to me that all we need do to create a very useful mobile extraction plant was to put the screws of any vessel inside a tube which would compel the slipstream to pass through one of my sieves. Of course, there's a certain loss of propulsive power, but our experimental unit works very well. We can't go quite as fast as we did, but the further we cruise the more money we make from our mining operations. Don't you think the shipping companies will find that very attractive?

"But of course that's merely incidental. I look forward to the building of floating extraction plants that will cruise round and round in the ocean until they've filled their hoppers with anything you care to name. When that day comes, we'll be able to stop tearing up the land and all our material shortages will be over. Everything goes back to the sea in the long run anyway, and once we've unlocked that treasure-chest, we'll be all set for eternity."

For a moment there was silence on deck, save for the faint clink of ice in the tumblers, while Dr. Romano's guests contemplated this dazzling prospect. Then Harry was struck by a sudden doubt.

"This is quite one of the most important inventions I've ever heard of," he said. "That's why I find it rather odd that you should have confided in us so fully. After all, we're perfect strangers, and for all you know might be spying on you."

The old scientist chortled gaily. "Don't worry about *that,* my boy,"

he reassured Harry. "I've already been on to Washington and had my friends check up on you."

Harry blinked for a minute, then realized how it had been done. He remembered Dr. Romano's brief disappearance, and could picture what had happened. There would have been a radio call to Washington, some senator would have got on to the Embassy, the Ministry of Supply representative would have done his bit—and in five minutes the Doctor would have got the answer he wanted. Yes, Americans were very efficient—those who could afford to be.

It was about this time that Harry became aware of the fact that they were no longer alone. A much larger and more impressive yacht than the *Valency* was heading towards them, and in a few minutes he was able to read the name *Sea Spray*. Such a name, he thought, was more appropriate to billowing sails than throbbing diesels, but there was no doubt that the *Sea Spray* was a very pretty creature indeed. He could understand the looks of undisguised covetousness that both George and Dr. Romano, now plainly bore.

The sea was so calm that the two yachts were able to come alongside each other, and as soon as they had made contact a sunburned, energetic man in the late forties vaulted over on to the deck of the *Valency*.

He strode up to Dr. Romano, shook his hand vigorously, said "Well, you old rascal, what are you up to?" and then looked inquiringly at the rest of the company.

The Doctor carried out the introductions. It seemed that they had been boarded by Professor Scott McKenzie, who'd been sailing *his* yacht down from Key Largo.

"Oh no!" cried Harry to himself. "This is *too* much! One millionaire scientist per day is all I can stand."

But there was no getting away from it. True, McKenzie was very seldom seen in the academic cloisters, but he was a genuine Professor none the less, holding the chair of geophysics at some Texas college. Ninety percent of his time, however, he spent working for the big oil companies and running a consulting firm of his own.

It rather looked as if he had made his torsion balances and seismographs pay quite well for themselves. In fact, though he was a much younger man than Dr. Romano, he had even more money owing to being in a more rapidly expanding industry. Harry gathered that the peculiar tax laws of the Sovereign State of Texas also had something to do with it. . . .

It seemed an unlikely coincidence that these two scientific tycoons should have met by chance,

and Harry waited to see what skullduggery was afoot. For a while the conversation was confined to generalities, but it was obvious that Professor McKenzie was extremely inquisitive about the Doctor's other two guests.

Not long after they had been introduced, he made some excuse to hop back to his own ship and Harry moaned inwardly. If the Embassy got two separate inquiries about him in the space of half an hour, they'd wonder what he'd been up to. It might even make the F.B.I. suspicious, and then how would he get those promised twenty-four pairs of nylons out of the country?

Harry found it quite fascinating to study the relation between the two scientists. They were like a couple of fighting cocks circling for position. Romano treated the younger man with a downright rudeness which, Harry suspected, concealed a grudging admiration. It was clear that Dr. Romano was an almost fanatical conservationist, and regarded the activities of McKenzie and his employers with the greatest disapproval.

"You're a gang of robbers," he said once. "You're seeing how quickly you can loot this planet of its resources, and you don't give a damn about the next generation."

"And what," answered McKenzie, not very originally, "has the next generation ever done for us?"

The sparring continued for the best part of an hour, and much of what went on was completely over Harry's head. He wondered why he and George were being allowed to sit in on all this, and after a while he began to appreciate Dr. Romano's technique. He was an opportunist of genius: he was glad to keep them round, now that they had turned up, just to worry Professor McKenzie and to make him wonder what other deals were afoot.

He let the molecular sieve leak out bit by bit, as if it wasn't *really* important and he was only mentioning it in passing. Professor McKenzie, however, latched on to it at once, and the more evasive Romano became, the more insistent was his adversary. It was obvious that he was being deliberately coy, and that though Professor McKenzie knew this perfectly well, he couldn't help playing the older scientist's game.

Dr. Romano had been discussing the device in a peculiarly oblique fashion, as if it were a future project rather than an existing fact. He outlined its staggering possibilities, and explained how it would make all existing forms of mining obsolete, besides removing forever the danger of world metal shortages.

"If it's so good," exclaimed McKenzie presently, "Why haven't you made the thing?"

"What do you think I'm doing out here in the Gulf Stream?" re-

torted the Doctor. "Take a look at this."

He opened a locker beneath the sonar set, and pulled out a small metal bar which he tossed to McKenzie. It looked like lead, and was obviously extremely heavy. The Professor hefted it in his hand and said at once: "Uranium. Do you mean to say . . ."

"Yes—every gram. And there's plenty more where that came from." He turned to Harry's friend and said: "George, what about taking the Professor down in your submarine to have a look at the works? He won't see much, but it'll show him we're in business."

McKenzie was still so thoughtful that he took a little thing like a private submarine in his stride. He returned to the surface fifteen minutes later, having seen just enough to whet his appetite.

"The first thing I want to know," he said to Romano, "is why you're showing this to *me!* It's about the biggest thing that ever happened. Why isn't your own firm handling it?"

Romano gave a little snort of disgust. "You know I've had a row with the Board," he said. "Anyway, that lot of old deadbeats couldn't handle anything as big as this. I hate to admit it, but you lot of Texas pirates are the boys for the job."

"This is a private venture of yours?"

"Yes. The company knows nothing about it, and I've sunk half a million of my own money into it. It's been a kind of hobby of mine. I felt someone had to undo the damage that was going on, the rape of the continents by people like—"

"All right—we've heard that before. Yet you propose giving it to us?"

"Who said anything about giving?"

There was a pregnant silence. Then McKenzie said cautiously: "Of course, there's no need to tell you that we'll be interested—very interested. If you'll let us have the figures on efficiency, extraction rates, and all the other relevant statistics—no need to tell us the actual technical details if you don't want to—then we'll be able to talk business. I can't really speak for my associates but I'm sure that they can raise enough cover to make any deal—"

"Scott," said Romano—and his voice now held a note of tiredness that for the first time reflected his age—"I'm not interested in doing a deal with your partners. I haven't time to haggle with the boys in the front room and their lawyers and their lawyers' lawyers. Fifty years I've been doing that sort of thing, and believe me, I'm tired. This is *my* development. It was done with *my* money, and all the equipment is in *my* ship. I want to do a personal deal, direct

with you. You can handle it from then on."

McKenzie blinked. "I couldn't swing anything as big as this," he protested. "Sure, I appreciate the offer, but if this does what you say, it's worth billions. And I'm just a poor but honest millionaire."

"Money I'm no longer interested in. What would I do with it at my time of life? No Scott, there's just one thing I want now—and I want it right away, this minute. Give me the *Sea Spray,* and you can have my process."

"You're crazy! Why, even with inflation, you could build the *Spray* for inside a million. And your process must be worth—"

"I'm not arguing, Scott. What you say is true, but I'm an old man in a hurry, and it would take me a year to get a ship like you've built. I've wanted her ever since you showed her to me back at Miami. My proposal is that you take over the *Valency,* with all her lab equipment and records. It will only take an hour to swap our personal effects—we've a lawyer here who can make it all legal. And then I'm heading out into the Caribbean, down through the islands, and across the Pacific."

"You've got it all worked out?" said McKenzie in awed wonder.

"Yes. You can take it or leave it."

"I never heard such a crazy deal in my life," said McKenzie, somewhat petulantly. "Of course I'll take it. I know a stubborn old mule when I see one."

The next hour was one of frantic activity. Sweating crew-members rushed back and forth with suitcases and bundles, while Dr. Romano sat happily in the midst of the turmoil he had created, a blissful smile upon his wrinkled old face. George and Professor McKenzie went into a legal huddle, and emerged with a document which Dr. Romano signed with hardly a glance.

Unexpected things began to emerge from the *Sea Spray,* such as a beautiful mutation mink and a beautiful non-mutation blonde.

"Hello, Sylvia," said Dr. Romano politely. "I'm afraid you'll find the quarters here a little more cramped. The Professor never mentioned you were aboard. Never mind—we won't mention it either. Not actually in the contract, but a gentleman's agreement, shall we say? It would be such a pity to upset Mrs. McKenzie."

"I don't know *what* you mean!" pouted Sylvia, "Someone has to do all the Professor's typing."

"And you do it damn badly, my dear," said McKenzie, assisting her over the rail with true Southern gallantry.

Harry couldn't help admiring his composure in such an embarrassing situation. He was by no means sure that he would have managed as well, but he wished he had the opportunity to find out.

At last the chaos subsided, the stream of boxes and bundles subsided to a trickle. Dr. Romano shook hands with everybody, thanked George and Harry for their assistance, strode to the bridge of the *Sea Spray,* and ten minutes later, was half-way to the horizon.

Harry was wondering if it wasn't about time for them to take their departure as well—they had never got round to explaining to Professor McKenzie what they were doing here in the first place—when the radio-telephone started calling. Dr. Romano was on the line.

"Forgotten his tooth-brush, I suppose," said George. It was not quite as trivial as that. Fortunately, the loudspeaker was switched on. Eavesdropping was practically forced upon them and required none of the effort that makes it so embarrassing to a gentleman.

"Look here, Scott," said Dr. Romano, "I think I owe you some sort of explanation."

"If you've gypped me, I'll have you for every cent—"

"Oh, it's not like that. But I did rather pressurize you, though everything I said was perfectly true. Don't get too annoyed with me—you've got a bargain. It'll be a long time, though, before it makes you any money, and you'll have to sink a few millions of your own into it first. You see, the efficiency has to be increased by about three orders of magnitude before it will be a commercial proposition. That bar of uranium cost me a couple of thousand dollars.

"Now don't blow your top—it *can* be done. I'm certain of that. Dr. Kendall is the man to get: he did all the basic work. Hire him away from my people however much it costs you. You're a stubborn cuss and I know you'll finish the job now it's on your hands. That's why I wanted you to have it. Poetic justice, too. You'll be able to repay some of the damage you've done to the land. Too bad it'll make you a billionaire, but that can't be helped.

"Wait a minute—don't cut in on me. I'd have finished the job myself if I had the time, but it'll take at least three more years. And the doctors say I've only got six months. I wasn't kidding when I said I was in a hurry. I'm glad I clinched the deal without having to tell you that, but believe me I'd have used it as a weapon if I had to. Just one thing more. When you do get the process working, name it after me, will you? That's all. It's no use calling me back. I won't answer—and I know you can't catch me."

Professor McKenzie didn't turn a hair. "I thought it was something like that," he said to no one in particular.

Then he sat down, produced an elaborate pocket slide-rule, and became oblivious to the world. He

scarcely looked up when George and Harry, feeling very much outclassed, made their polite departure and silently snorkled away.

"Like so many things that happen these days," concluded Harry Purvis, "I still don't know the final outcome of this meeting. I rather imagine that Professor McKenzie has run into some snags, or we'd have heard rumors about the process by now, But I've not the slightest doubt that sooner or later it'll be perfected, so get ready to sell your mining shares . . .

"As for Dr. Romano, he wasn't kidding, though his doctors were a little out in their estimates. He lasted a full year, and I guess the *Sea Spray* helped a lot. They buried him in mid-Pacific, and it's just occurred to me that the old boy would have appreciated that. I told you what a fanatical conservationist he was, and it's a piquant thought that even now some of his atoms may be going through his own molecular sieve, fate willing.

"I notice some incredulous looks, but it's a fact. If you took a tumbler of water, poured it into the ocean, mixed well, then filled the glass from the sea, there'd still be some scores of molecules of water from the original sample in the tumbler. So—" he gave a gruesome little chuckle—"it's only a matter of time before not only Dr. Romano, but all of us, make some contribution to the sieve. And with that thought, gentlemen, I bid you all a very pleasant goodnight."

Next Issue — Another Fine Complete Novel

YEAR OF THE COMET

A Novel of the Future

By JOHN CHRISTOPHER

He rode on a swaying camel under frost-bright stars—and in his immediate past were world-spanning travels, a substitute bride and an "Utopia" overthrown because it gave people too much of what they ought *to want. You'll thrill to the daring and originality of this great novel by a writer who—concurrently or almost concurrently with this issue—walks a Heinlein-iridescent path to fame with an eight-part serial in the enormous prestige pages of the* Saturday Evening Post.

SHADOW TROUBLE

When a man's shadow feels like stepping out it's not too wise for him to get angry.

By DAL STIVENS

WHISPERING JIMMY, the hermit, was about to blow out his candle in his hut in the lonely Australian bush when he observed that his shadow was behaving somewhat agitatedly. Whispering Jimmy unpursed his lips and was about to speak to his shadow when, suddenly, it addressed him in this fashion:

"You're a stick-in-the-mud old noun, aren't you?"

Whispering Jimmy wasn't as startled as others might have been. He had been addressing his shadow for some years now, though the evening talks had hitherto been one-sided.

Whispering Jimmy, who had got his nickname because of his soft voice, turned his attention to the shadow's question. He poked a finger into his beard, nodded his head and finally said: "I expect you're right, Shadow."

"Of course I'm right," said the Shadow, assertively. "You're a quite unprintable stick-in-the-mud!"

"Sorry you feel that way, Shadow," said Whispering Jimmy. "But it's going to be a bit embarrassing for me when people see me without a shadow."

"Can't help that," said the Shadow shortly: "I've got my own life to live."

"I could keep out of the direct sun when talking to the other blokes," suggested Whispering

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Jimmy. "What do you think of that, Shadow?"

Whispering Jimmy never got an answer. While Whispering Jimmy had been talking his shadow had disappeared.

"I suppose he was bored with only me to listen to," Whispering Jimmy told himself.

Whispering Jimmy got on well enough without his shadow. He was careful to avoid talking to the other old bush recluses in full sunlight.

A year passed. Then one evening Whispering Jimmy happened to glance up while taking off his boots and saw that his shadow had returned.

"Nice to see you, Shadow," said Whispering Jimmy, who had a very kind nature. "I have no hard feelings."

"Wouldn't get you anywhere if you had, Whispering," said the Shadow. "You're still the same old stick-in-the-mud—asterisk. I see you haven't changed an adjectival bit."

"I see you have changed, though, Shadow," said Whispering Jimmy. "You've lost your beard." And Whispering Jimmy fingered his own luxuriant growth.

"Felt a beard made me feel too old, Whispering," said the Shadow.

"You're thinner, too, Shadow," said Whispering Jimmy. "Slim as a rake." And Whispering Jimmy patted his stomach.

"Slimmed it off with a bit of exercise," said the Shadow. "Feel years younger."

Whispering Jimmy contemplated his Shadow for some time without speaking. Then he said: "I suppose you'll be pushing off again soon, Shadow. Once you get itchy feet—"

"Not me," said Shadow. "Home to stay, that's me. Got rid of the wanderlust."

Whispering Jimmy meditated for some time and then observed: "I can see it's going to be awkward. People are bound to notice. They'll talk."

"No doubt of that, Whispering," agreed the Shadow. "You'll have to get busy!"

"Busy?" asked Whispering Jimmy, puzzled.

"Shaving off your beard and getting rid of your pot."

"Hey, wait a minute!" said Whispering Jimmy indignantly, "I'm not getting rid of them. I've had my beard and pot longer than I can remember."

"All the more reason why you should get rid of them, Whispering," said the Shadow, firmly. "A bloke can get too set in his ways."

"I'm too old to change now," said Whispering Jimmy, equally firmly. "I keep them—my fungus and my pot."

"Now, look here, Whispering," said the Shadow. "You've got to wake up to yourself. Do you want the other blokes to laugh at you?

Do you?" The Shadow pointed an accusing finger. "Do you want to be known as the bloke whose shadow doesn't fit? Do you?"

"I wouldn't want that, Shadow," said Whispering Jimmy, weakening. "I expect you're right."

"Of course, I'm right," said the Shadow. "I'm usually right."

"I expect you are," said Whispering Jimmy, "though I'm partial to my beard. It'll have to go tomorrow. Well"—he yawned—"it's late, Shadow."

Whispering Jimmy went to blow out the candle but the Shadow stopped him peremptorily.

"Oh, no, you don't, Whispering!" he said, sternly. "Half an hour's knee-bending for you, before you hit the hay! I'll give you some P.T. drill."

At the end of six weeks Whispering Jimmy's shape and that of the Shadow's matched entirely. Whispering Jimmy compared the two shapes by candlelight and confided: "I'm obliged to you, Shadow. I really feel much better. Years younger, in fact."

"Think nothing of it, Whispering," said the Shadow.

"I feel like a colt," said Whispering, and he flexed his biceps.

"That's splendid," said the Shadow. "Now we can have a quiet life."

"I feel like twenty-five," said Whispering, and he did a little jig. Then he pranced over to the bed and tugged out an old tin trunk.

He said: "No sense in being a hermit—not with all those pretty girls at the dance tonight." And he dragged out his best suit, shook out the moth balls, and put it on, hurriedly, crying: "I've got to make up for lost time, eh, Shadow? I'm obliged to you."

Whispering skipped to the door: "Shake a leg, Shadow," he enjoined. "We're off now!"

"You might be, Whispering, but I'm not!" said the Shadow. "I came home to enjoy a quiet life. That's gratitude for you—wanting to take me gallivanting! You ought to know better at your age, Whispering!"

But Whispering Jimmy had left. When he returned, still skipping, at two o'clock in the morning and lit a candle he found his shadow had gone. On the wall was pencilled: Gone in search of a quiet life, you old Romeo—*Shadow*.

That was five years ago and Whispering Jimmy is still without a shadow. He doesn't mind unduly. He's married a very attractive young widow; and three, he reckoned, would have been a crowd.

A WOMAN'S HEART

By ISAAC ASIMOV

Flora was a modern, scientific girl. Her demands would have driven Diana's suitors mad!

FLORA MILLER was perfectly beautiful. She knew that she was, but she explained to the three adoring young men that she was far from completely happy about it.

"It is not only demons who grant wishes," she said. "Aphrodite, properly approached, will—and often has."

"Aphrodite indeed," said Thomas, ardently.

Richard nodded agreement and Henry sighed.

"I asked for a husband who would make me truly happy and she gave me perfect beauty. But, alas, the results are insufficiently selective. All men are attracted to me, but not all men can make me truly happy. So Aphrodite granted a further boon. Any man who wishes to marry me may request of her one gift to make me happy.

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Among the many aspirants to my hand, I have selected you three as the most pleasing to me. Tell me each your plan to make me happy, and I shall make my final choice. Do you agree?"

"We agree," chorused the three young men.

"You will have thirty seconds to consider," said Flora.

Thomas said, "I need no time to consider, but will speak at once."

Thomas was a trifle plump, but he had a determined chin. "What a woman must have is economic security," he went on quickly. "Marry me, Flora, and I will ask Aphrodite for unfailing success in business. I shall ask for the golden touch which shall convert all of my enterprises into stacks of cash. We shall always have more money than we can spend and you shall be secure—therefore completely, deliriously happy."

"Hum," said Flora, thoughtfully.

Richard broke in and said, "Nonsense, Flora. Thomas will be working constantly to increase his wealth and you will be wretchedly lonely—therefore most unhappy."

Richard was dark of complexion, with lively brown eyes and white teeth. "Marry me and you shall have what every woman needs most. Romance! I will ask Aphrodite to grant me the gift of eternal ardor. I shall dance divinely, know the brightest places and gayest people. And I shall love you always. You will be perfectly loved—therefore happy."

"My," said Flora, pensively.

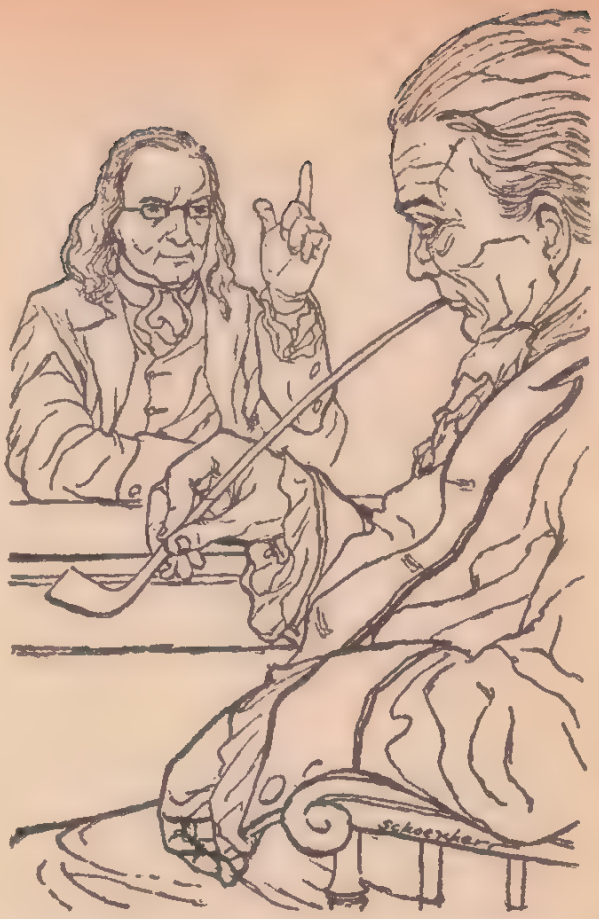
Henry said at once, "Not at all, my dear. Joy incessant palls and love, unchanged, will cloy. You will be perfectly bored—therefore supremely unhappy."

Henry's face was angular and he had a high, thoughtful forehead. "Consider, instead, that you are a modern woman," he went on. "As an American wife of today you will be primarily an engineer. You will have a machine to wash your dishes, another to wash your clothes, another to dry them, another with which to iron them. Think what that will mean! A machine to heat the house and one to cool it, a machine to heat your food and one to cool it, a machine to mix your batter, one to warm you at night, one to carry you from place to place, one to tan you, one to entertain you, and one to take you to the moon or Mars someday. All these machines will be under your control and on all of them your own and your family's comfort and happiness will depend. Marry me, Flora, and the gift I shall ask is this: that all your machines remain always and forever in perfect repair."

And Flora threw her arms about Henry's neck with the most delightfully abandoned gesture and said, "I am yours."

Ben's Idea

Old Ben was sure he had run away to sea somewhere in the Universe. But that was only a trillionth part of the story!



By HENRY SLESAR

THE COACHMAN, who had been cursing the November chill with muffled oaths beneath his great-coat, suddenly grew amiable. With a pleasantry on his lips, he clucked the horses down Market Street and into the arched passageway leading to Franklin Court. Dr. Eldon Sheppard, his passenger, attributed the change in temperament to the fond affection in which even the lowliest citizens of Philadelphia held the famous old gentleman who lived here.

There was a warm glow of yellow light in the upstairs chamber of the house, and Dr. Sheppard sighed with relief. Throughout the tiresome journey, he had entertained some doubts as to whether Ben Franklin would be home, on this of all nights.

When he climbed from the carriage he was in such a fine frame of mind that he dropped a generous number of coins into the fingerless gloves of the coachman. Then he rapped briskly on the front door.

"Ah," he said to the girl who answered, "am I right in assuming that Dr. Franklin is at home?"

She bowed slightly. "Yes, sir, Dr. Sheppard," she said. "Dr. Franklin is in his study, sir."

"I'm glad to hear it." He blew a billow of frost into the warm room and removed his outer clothing. He was a frail man, some-

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what stooped, and age had calcified his features into a permanent cast of cynical good humor.

"I've been to the Congress, Annie," he said with a wink.

"Oh, sir! Any news of the election, sir?"

"Nothing yet, nothing yet." He rubbed his palms together. "I suppose Dr. Franklin is occupied as usual?"

"Oh, yes, sir. Writin' much he is, sir. He gave me the strictest orders—"

"Pah!" The doctor made straight for the stairs. "This is no night for work, Annie. I'll soon rouse the old gentleman."

At the door of the study, he straightened the jabot beneath his chin and knocked boldly. Ben Franklin's reply was too curt for the doctor to determine with any certainty whether or not he was annoyed by the intrusion. But as Dr. Sheppard entered the room, there was a cheerful smile on Franklin's lined face.

He rose from behind his desk and came to take both of the doctor's hands in his, shaking them so vigorously that the short white locks surrounding his bald head bobbed up and down.

"Eldon, my dear friend," he said. "Come sit with me and tell me your news."

"I'm afraid I bring none," Dr. Sheppard said wryly. "I left the Congress with our friends in a state of indecision, and came to seek you out. It was a long while before I reasoned that you might be at home." He chuckled, and began to fill his pipe.

Franklin sighed. "Then I must wait. But I have not been waiting in idleness." His eyes twinkled, and he removed a sheet of foolscap from his writing desk. "I have been quite diligent, as you can see."

Dr. Sheppard seated himself, and gazed with awe at the never-ending shelves of books that rose from floor to ceiling of the great room. "More writing?" he said with amusement. "Isn't it possible, Ben, that there is already too much writing in this world?"

"Perhaps too much of *mine,*" the old man said, and laughed. He limped back to the desk and sat down with a groan. "But my theme has excited me," he said, and his old eyes sparkled.

"Oh? Another scientific paper?"

"I guess you could call it that."

The doctor's mouth smiled around the corners of his pipe stem. "There's no end to your ingenuity, Benjamin. Even on a night like this . . ."

He looked around the chamber at the odd paraphernalia: the glass machine that depicted the circulation of the blood in the arteries and veins, the great rocking chair with its automatic fanning device, the rolling press, the long pole with levers and clasps that brought down books quite miracu-

lously from the topmost shelves of Franklin's enormous library.

"Of course," Franklin said, his eyes suddenly dreamy, "it would be hard to describe my theory as scientific at the moment, considering the unfortunate lack of proof, or even the possibility of experimental verification. Perhaps it will be considered mere philosophical exploration, or . . ." His eyes focused on reality again. ". . . or just plain poppycock."

"Well!" Dr. Sheppard placed one knee over the other. "If you were planning to interest me, you have. Let's hear the new Franklin idea."

The old man removed his spectacles and polished them with a gigantic cloth. When he replaced them, he said: "Very well. But first, doctor, I must have the answer to a question. How many worlds are there?"

"Worlds? I don't understand."

"Worlds. Universes. Planets like our own."

"Mmm. A great many, I suppose. An infinite number, I should imagine."

"You say an infinite number. Do you mean by that a number which cannot be counted, because it has no limitation."

The doctor snorted. "You know very well what I mean."

"But you admit that, as far as our knowledge of the Cosmos goes, there should be no end to the number of possible worlds."

"Very well. I'll say that."

"Good. Then you must carry your admission further, Eldon. You must now also admit that there might well be another planet very much like our own Earth, somewhere in Space."

"Why not?" Dr. Sheppard said. "It seems probable."

"Of course. But you are not through yet, doctor. For by that same token of logic, you must now admit that an *identical* Earth exists somewhere in Space. An Earth complete in every detail, with lands and seas and governments and inkpots and waistcoats and gout."

"Yes," the doctor said stoutly. "Given an infinite number of worlds—"

"Exactly! Given an infinite number of worlds, you must accept an infinite number of possibilities. You must accept the probability that a planet exists, somewhere in the void, where an old campaigner named Franklin and a good doctor named Sheppard are alive at this very moment, discussing the possibilities of identical worlds."

He leaned back, rather triumphantly.

The doctor coughed. "Well! Now we're beyond mere probability, Ben—"

"Ah, but are we? You are willing to admit that another Earth may exist identical to ours. Why can you not envision an Earth

whose people and events are identical to ours?"

"You make my head swim!"

"I intend to—because my theory will not end so politely, doctor. I am going to ask you to accept an even more fantastic supposition. An identical Earth—no, a trillion identical Earths!—where Benjamin Franklin and Eldon Sheppard are sitting in a library in Franklin Court, Philadelphia, discussing this very subject, but where that lamp—" He gestured to a small, circular reading lamp on the corner of his desk. "Where that lamp has a blue shade rather than a green."

The doctor yanked the pipe out of his mouth. "Indeed!" he said, almost indignantly.

"And yet we are not finished!" Franklin said enthusiastically. "Because I must ask you to accept an identical Earth that *has* no Benjamin Franklin, for Benjamin Franklin had run off to sea as a lad, and was drowned at the age of fifteen!"

"This is nonsense," the doctor said stiffly. "This is the drug speaking, Ben."

He caught himself when he realized the unkindness of his words. "I'm sorry," he said gently. "But you'll have to admit, Ben, that this theorizing is beyond your scope. Your electrical experiments—now *they* were something solid. Something you could put hands on, experiment with, employ directly to prove truth or falsehood—"

"I know, I know," Franklin said sadly, but still with a cheerful smile. "And yet, my heart tells me that my mind is thinking clearly. If you say 'infinity', doctor, then you must mean 'infinity'."

Dr. Sheppard stood up and paced the floor. The two men were silent for a time, until the quiet was broken by a sound from the street. It began as an idle shout, and then it became a chorus of voices. They grew stronger as Dr. Sheppard strode to the north windows, and flung them open to see what had caused the excitement below.

"Hallo, there!" he cried out. "What's happened?"

A voice from the gathering crowd beneath Franklin's house shouted a reply, and then a cheer came from the throat of the crowd, filling the library with its echoes. Old Ben Franklin rose from behind his desk, and went to the window to learn the cause of the outburst.

But Dr. Sheppard turned to him quickly, wanting to be the first to announce the good news to his companion.

"My dear Ben!" he said warmly, pumping the old gentleman's hands. "News from the Congress! Wonderful news! The first President of the United States has been announced by the electors. My dear old friend. It's you!"

—Continued from other side

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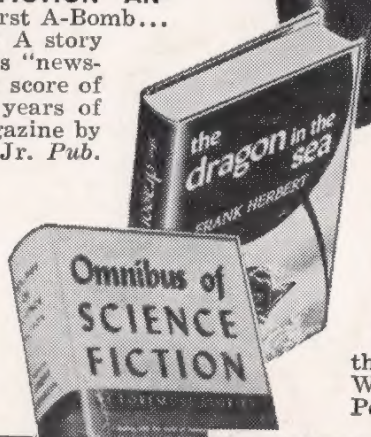

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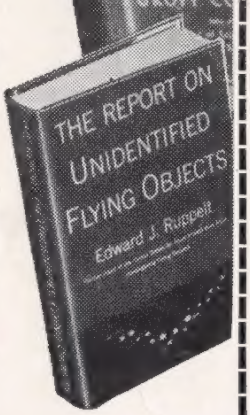

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